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—Ed McCracken

Story starts on page 96

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Story starts on page 216

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Story starts on page 274

Special Advertising Section For Bay Area Computer Buyers
MicroMarketplace Starts on Page 74

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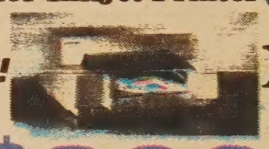

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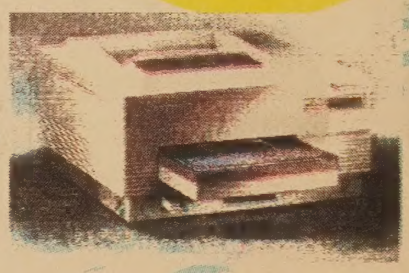

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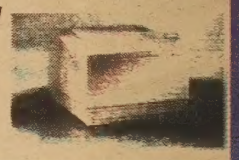

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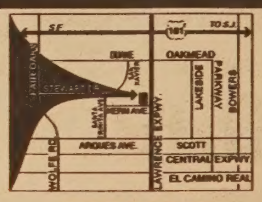

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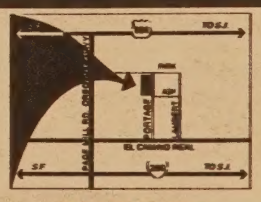

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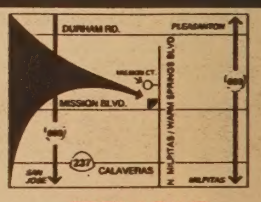

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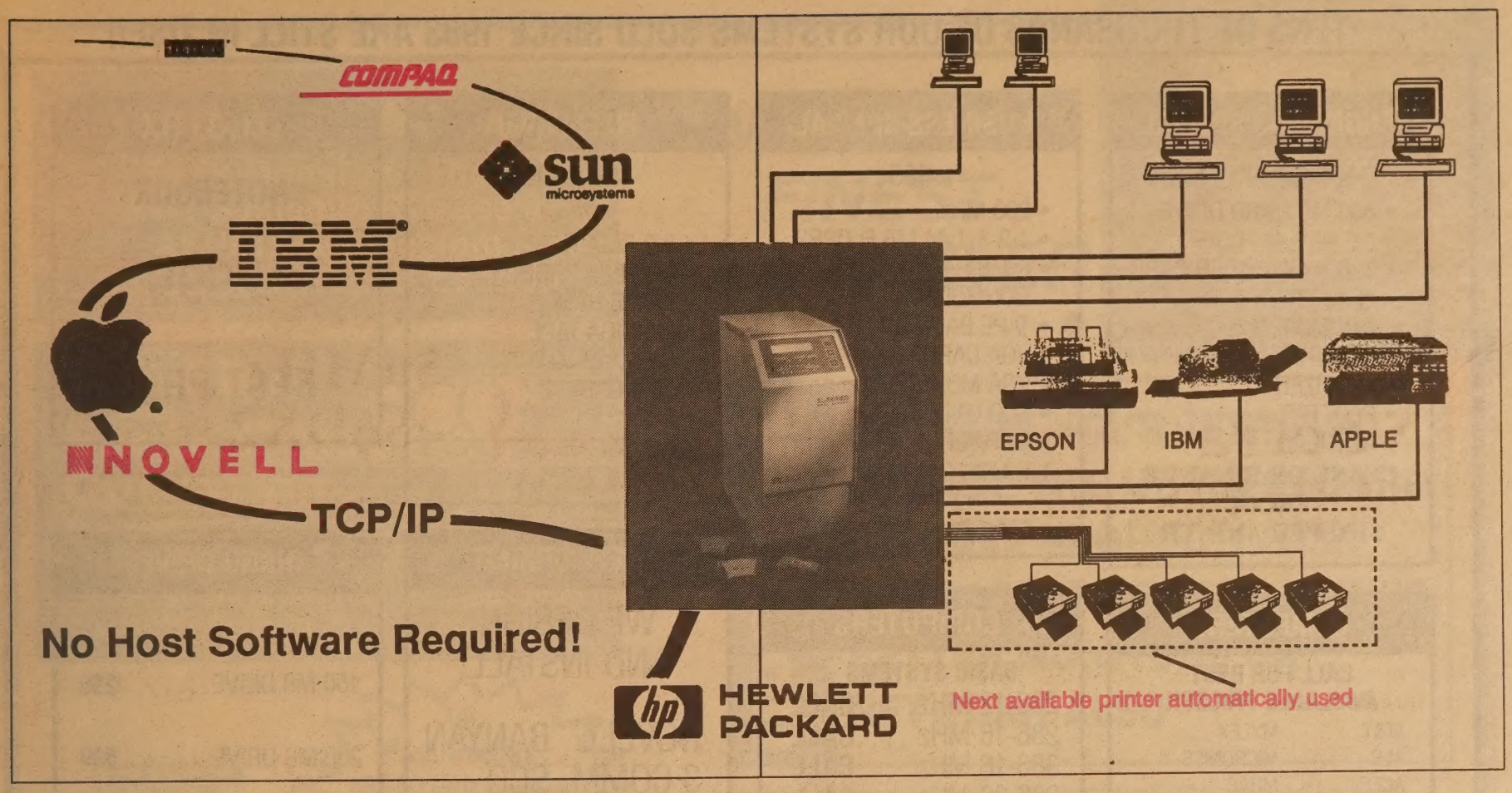

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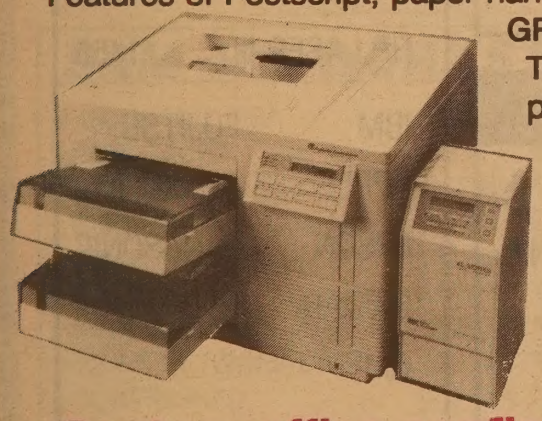

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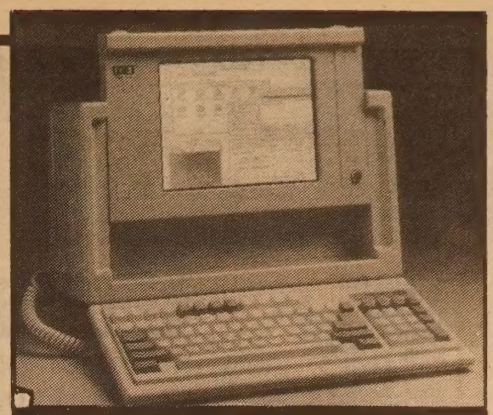

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JULY 6, 1992 ISSUE #97
MICROTIMES

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A NOTE FROM THE EDITORS

It's not news at this point that the personal computer industry is experiencing some pretty radical paradigm shifts lately. New hardware offering new power and possibilities, and new software just arriving to take advantage of it.

And, of course, new operating environments. It remains to be seen which of the contenders—Windows NT, Sun's Solaris, Apple/IBM's Taligent, IBM's OS/2, or some operating system yet unimagined—will prevail in the impending standards wars and shape what we all do with our computers in the decade to come.

Over at Silicon Graphics, they've been preparing for these changes, and in our cover story starting on page 96, president and CEO Ed McCracken offers some insight as to what it all means.

In a related development, our Creative Tools section features a story on how the Grateful Dead are using an Iris workstation to create real-time effects on their summer tour. In the same section, Tony Reveaux, a long-time pal of San Francisco's Residents, shares their computer secrets from "Freak Show" and other creations.

—ME

COVER STORY

Silicon Graphics Paints The World Indigo *By Mary Eisenhart* 96
Cover photo: Michael Jay
When we visited Silicon Graphics for the first time three years ago, it was the uncontested leader in various niche markets that required state-of-the-art 3-D graphics workstations. The Iris Indigo, launched last year, is the first salvo in SGI's campaign to take over a lot of Mac and PC desktops in the next decade. President and CEO Ed McCracken explains.

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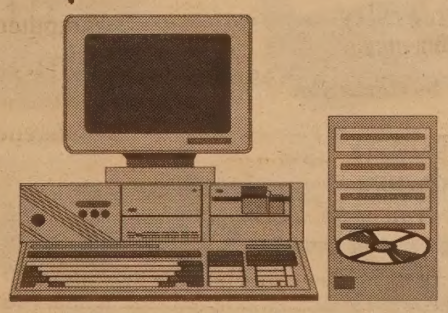

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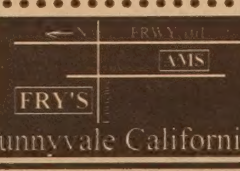

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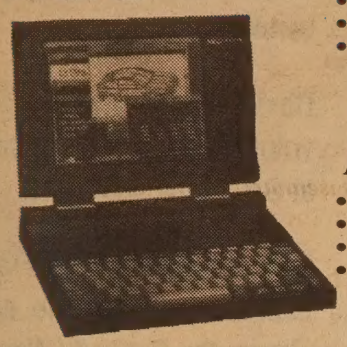

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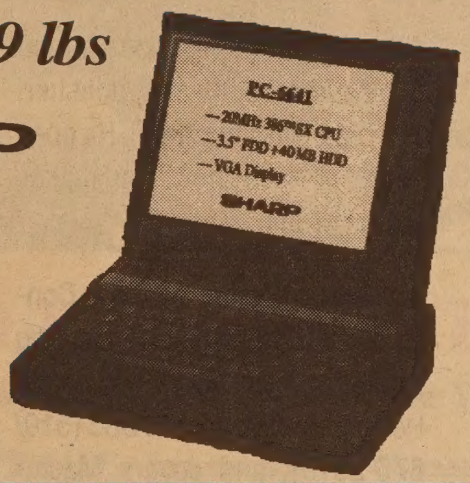

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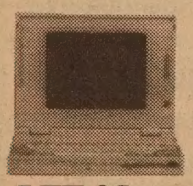

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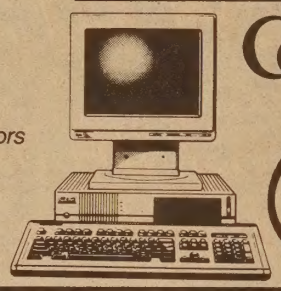

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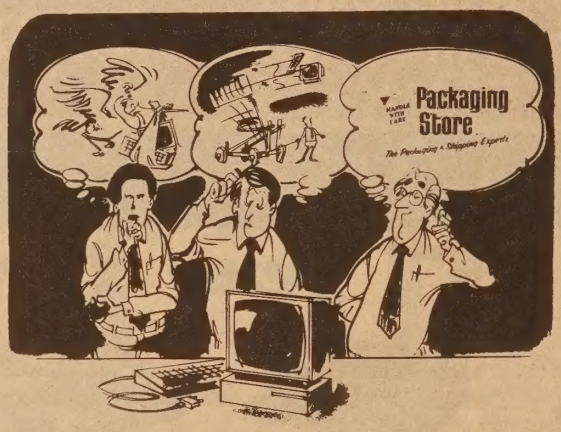

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John Wolcott is a free-lance writer in editorial and hardware documentation area. He currently edits and publishes *The Intermod*, a Southern California amateur radio publication.

Don't Panic!

LAN columnist **Wayne Yacco** will be back next month.

Bennett Falk's UNIX column will resume when he returns from a well-deserved vacation in France.

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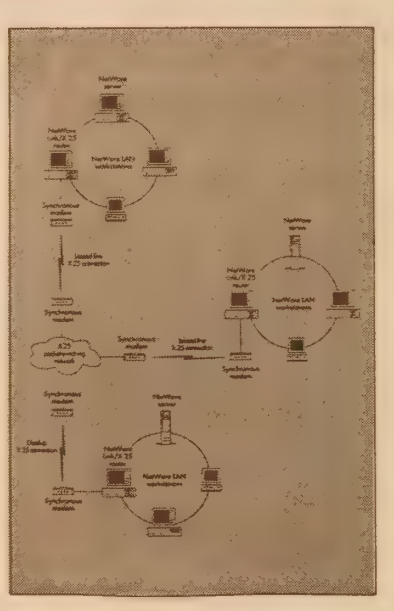

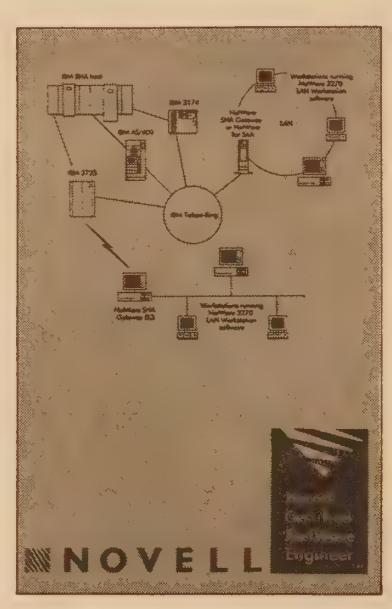

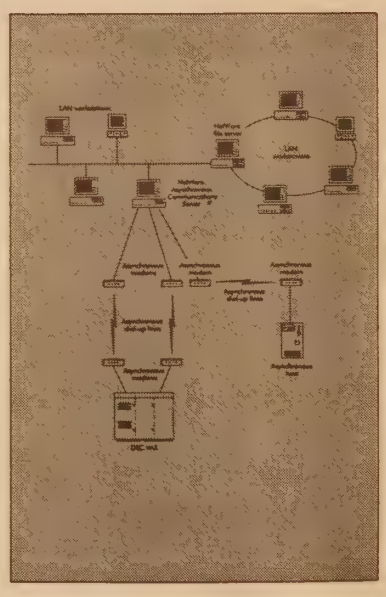

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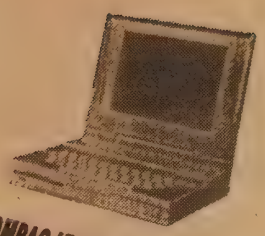

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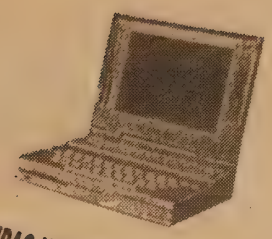

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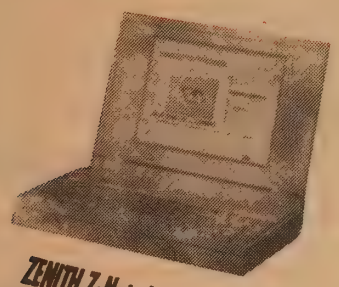

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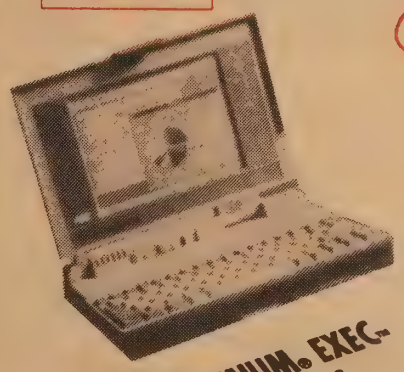

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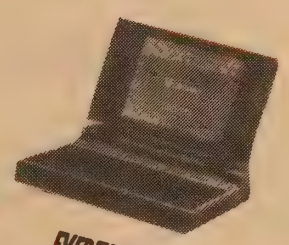

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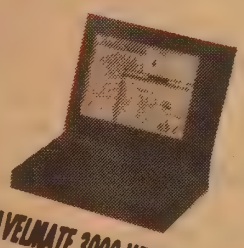

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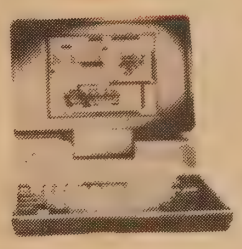

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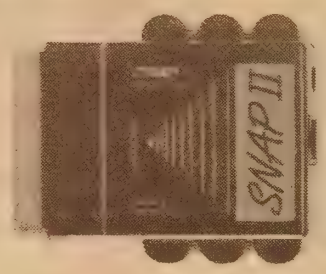

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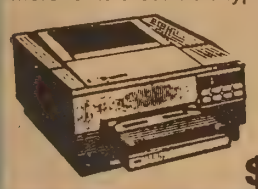

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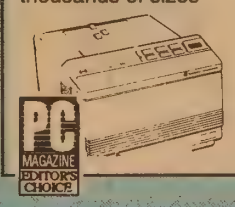

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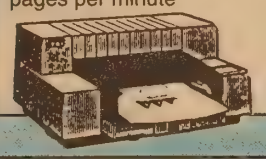

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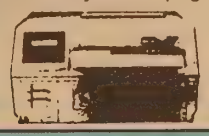

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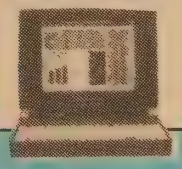
- Intel 33MHz 486



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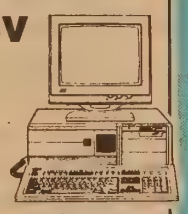

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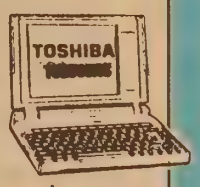
- 80386 20MHz



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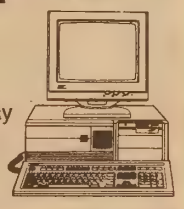

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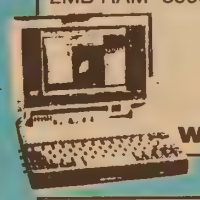

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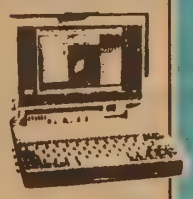

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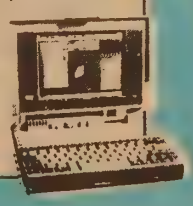

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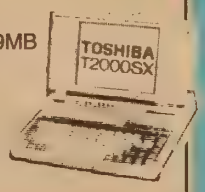

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Letters

WALKER YES, DVORAK NO

I just wanted to let you know how much I enjoyed your article "Autodesk: The Next Generation." I love to hear what people who shaped this industry have to say. John Walker is straight as an arrow. I wish some of our "leaders" in DC had a chance to read the article. It might give them some insights into the pathetic workings of our economy. Keep up the work like that.

Reading an article like that makes me despise the unjustly famous industry leech John C. Dvorak even more. Get rid of that pathetic pompous, buffoon. All *he* ever blows around are his opinions about what other people produce. If he could ever live up to his own criticism he might amount to something.

Abrasha Staszewski
The WELL

DISKLESS: PRO AND CON TALES FROM THE REAL WORLD

Pardon me if I gag just ever so slightly over the Business Solutions piece "Freedom From the Floppy," by Peter John Harrison. But it embodies just the kind of techno-nerdy, do-it-because-it-can-be-done thinking that still gives technological solutions a bad name among real-world users and buyers.

The advice Mr. Harrison offers—to put together a custom network of emasculated, disk-driveless workstations in order to cut costs and increase the system administrator's sense of control—brings up memories of my own involvement in putting together a customized, non-standard network of IBM PCs.

I was an account supervisor in the San Francisco office of a large, New York-based public relations agency. As the only person in the office with any notion of the meaning of the acronym DOS, I was designated as point man in the replacement of our Wang system with a 16-station LAN.

The agency's New York MIS group, after rejecting out of hand my recommendation that an office full of people whose computer literacy ranged from neophyte to hostile phobia would do better with an oh-so-much-more-user-friendly Macintosh system, came up with an assemblage of IBM PS/2s, 3Com server, and WordPerfect 5.0.

To cut costs, the PS/2s (IBM was a client of the agency at one time, and so the IBM brandwas adopted as a corporate-wide standard, user needs be damned) were to be monochrome Model 25s with 640K RAM, a single 720K 3.5" floppy drive, and no hard drives.

Now jump ahead a mere two years, and there is new management in the PR agency, a manager who despises DOS computers. He recognizes he can't dump a $90,000 system out the window in order to buy Macs, though, and he asks me, "Can we at least add Windows?"

Well, yes. And no. Yes, a network of IBM PCs should be relatively easy to convert to Windows. If each workstation has a hard disk drive. If each workstation has sufficient RAM. If the PR agency is willing to buy new software (using the agency's merely-two-years-old WordPerfect 5.0 under Windows is like going on vacation to watch television reruns in a hotel room).

Now, no transition of this kind is ever going to be painless, or free. That much is understood on both sides of the question. But—and it's this *but* that separates the Harrison school of thought from my own, non-techie frame of mind—the further you drift from standards, and the more creative you get on your system configuration, the less flexible will your system be when the next cat's-pajamas, gotta-have-it revolution in systems or software comes on the market next year, or next month, or next week. And mark my words, that day will come.

No sooner than Mr. Harrison's clients have paid him his fee, some new program will hit the street that the manager of the office now saddled with his system is going to want to use. Or perhaps it will be the successor to that manager, a successor who had no say in the configuration of the system, but who will nonetheless have to deal with it. Maybe it will be a new word processing program, or an upgrade to the one they are using now. Maybe it will be a new spreadsheet that just one of the users in the office wants to add. Maybe it will be nothing more than a game, or a demonstration program, or God only knows what. But getting it to run on that jerry-rigged system is either going to be hell, or it simply won't happen, and another office will rue the day it allowed a computer consultant to walk in the door.

The day may come when computer systems stabilize, and components standardize, and upgrading is as painless as buying a new set of tires for the family car. But that day is not here, and is not likely to be here very soon.

No offense intended to Mr. Harrison or the computer consulting community, but until that day arrives, I say beware the custom configuration, or else have very deep pockets indeed.

Jerry Ford
Concord

Peter John Harrison responds: *It may seem like a good idea to include hard drives in each LAN workstation's configuration, but for large, medium, and even most small LANs, it quickly becomes a liability.*

One of the major advantages LANs have over a fleet of standalone PCs is the ability to

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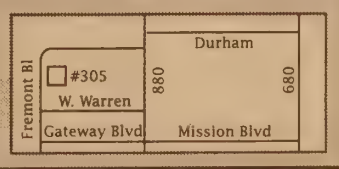

allow users to share programs and data. When each workstation has its own hard drive, network users often lose this ability—even on "peer-to-peer" networks that allow shared access to any hard drive on the LAN. When each system has its own drive, it can become a hassle to hunt through all those hard disks, each with its own directory structure, to find the most current version of a particular file. Then, once it's been found, it may be useless because it's been modified using a different program (or a different version of the same program).

Having a central file server to act like a large, shared disk drive provides users with a common pool of data and matching applications programs that everyone can use. If someone needs a program not available on the network, it can be installed in a public directory on the server (where everyone can get to it), or in a private directory on the server (where only the authorized user has access). Storing data centrally also makes it easy to back up, something most end-users don't enjoy doing.

With all programs and data installed on the server, there's no real requirement to have hard drives on the workstations. Even the floppy drives are mostly used only to boot up the PCs and get them logged into the network. In such an environment, diskless workstations make a great deal of sense.

AMIGA LIVES, WITH OR WITHOUT COMMODORE

I've been reading Mr. Leeds's column for some time, and I'll have to tell you that I could see it coming. In recent months, he seemed like a writer that was trying to meet a deadline rather than someone writing about something they enjoyed.

There is no question that Commodore has botched the marketing of the Amiga, but that does not make it any less of a computer. I don't really care if there are more PCs than Amigas. All I know is that for video graphics and sound manipulations, the Amiga is my number one choice. However, for word processing and spreadsheets, naturally, I'll turn to my 386, and Word and Excel for Windows.

Through sheer brute force, the PC is overcoming its hardware limitations and moving into the graphics arena. Microsoft seems to be determined to shove multimedia down everybody's throat, but the majority of people may see that they just don't need it. The PC has flourished because it did what most people needed a computer to do. Multimedia will be a much harder sell. Besides, the Amiga is already well entrenched in the video area and PCs have a ways to go.

PCs are also hampered by a plethora of "standards." With manufacturers going in all different directions, I'd be pretty scared to buy a new PC. Scared because I couldn't be sure that it would be compatible with new software. Scared because it would be a crap shoot if I ever wanted to upgrade or add new components. I have held off buying a new 486 for just these reasons.

In any event, I think you could have handled Mr. Leeds's departure a little differently. Everybody gets tired at some point in their careers. Why not let somebody take over the reins that still has the fire and passion for the Amiga? There are a lot of them out there.

Douglas Nakakihara
Simi Valley

I had finally made it to my not-so-local dealer, and was on my way home with some reading material. I arrived home and tore into *MicroTimes*, eager to read the little tidbits on my favorite computer—but wait! Where is the...no, it can't be! The Amiga section

Hassle-Free Printer Sharing For Your Local Area Network

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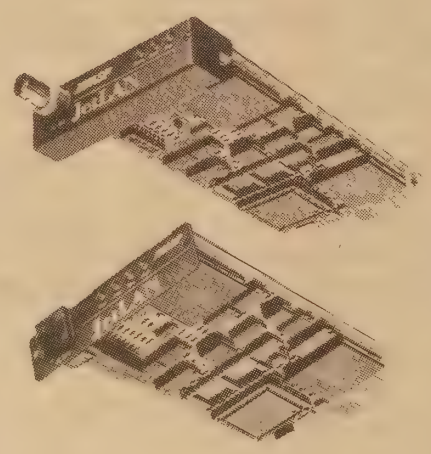

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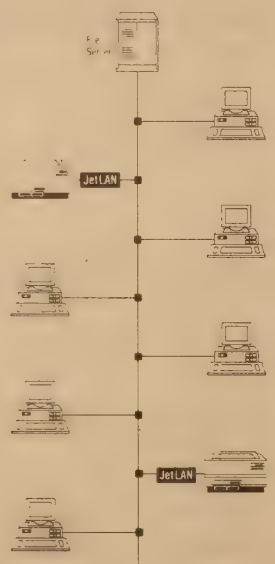

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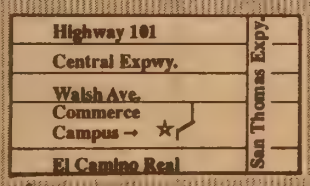

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is...gone? But, but you can't! No! Aaaaaaarrrrrggghhh!

Oh, there it is, the farewell column? Does that mean Amiga coverage will be ending?

I am quite saddened by the departure of Matthew Leeds's coverage of the Amiga in *MicroTimes*. I have taken for granted his informative, hopeful column on the best computer under $2000—hell, under $5000!

As I read the column, I found myself consistently agreeing with Matthew regarding Commodore's handling of the Amiga. It is a tragedy that such a wealth of innovative software will find its way into the hands of so few.

My position as a local area network administrator of a Banyan LAN places me in constant contact with Intel-based DOS/Windows/OS/2 and Macintosh platforms. I see time wasted on these platforms that could be saved on Amigas. Unfortunately, much of the saved time would be wasted on difficulties seen networking the Amiga. I can't approach my superiors about Amigas without LAN support any more than I could approach them regarding Macs before they were supported on Banyan LANs.

I will miss your column, Matthew. It is the main reason I read *MicroTimes*. The other stuff is informative, but not reason enough for me to look for the magazine, never mind look *forward* to it. I only hope you maintain support for "the best kept secret in computing"—the Amiga.

Charlie McCready
Thousand Oaks

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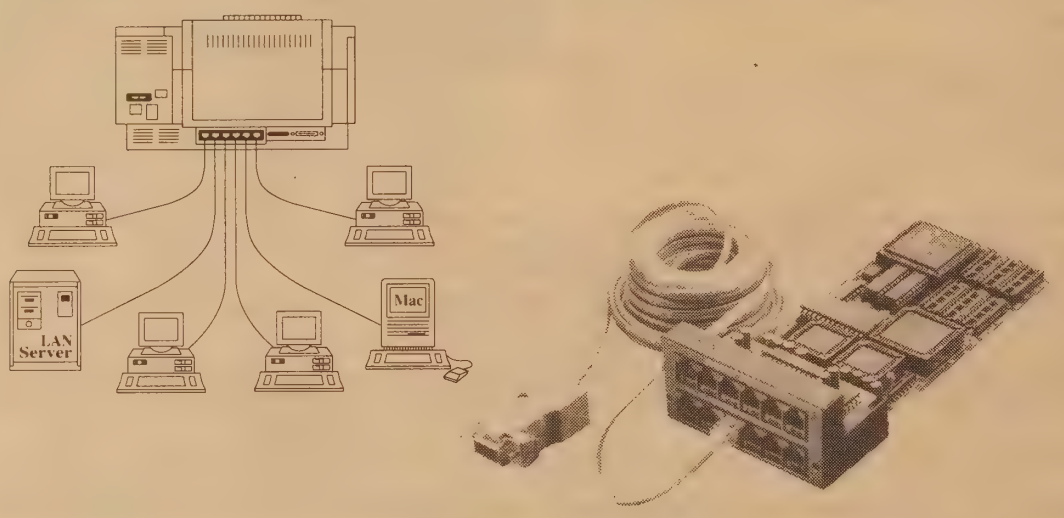

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Mary Eisenhart responds: *As I said on the Contributors page last issue, we are acutely aware of the passionate devotion and innovative genius of the Amiga user community. We want to continue to support that community. We're currently trying to figure out the best way to do it and we'd like to work together with Amiga users to help make this happen.*

But here's the situation. In the eight years we've been publishing, we've seen a lot of great systems with deeply committed users become orphans and disappear. Some Amiga users might remember the Mindset, another beautiful graphics machine ahead of its time. It died.

We have here a situation in which the parent company has essentially orphaned this machine, for reasons best known to itself. To cite only one of Mr. McCready's points, the Macintosh has supported networking since 1985. The Amiga doesn't do it yet.

We don't want the Amiga to go the way of the Mindset, and the TI 99, and the Gavilan, and a lot of other machines people really liked. We recognize that continuing to offer editorial coverage of the machine is a useful tool in staving off hardware death, if only by keeping committed users informed.

And on the other hand, things being what they are, we can't inform you if you don't inform us.

We know there are lots of people out there doing great things with their Amigas, often things other people would like to know about. These people rarely send us press releases or call us; they're too busy doing their work, and rightly so. But the result is that we don't know about them.

So what it really comes down to is this. All you fiery and passionate Amiga users out there, send us mail at any of the above addresses. Tell us what you're doing. Tell us about interesting things other people are doing. If we think the story is of interest to a significant number of Amiga users, we'll put a writer on it. Let us know if you want to write stories yourself.

We are very willing to keep covering the machine. We can't do it without your help. Let's see what we can do.

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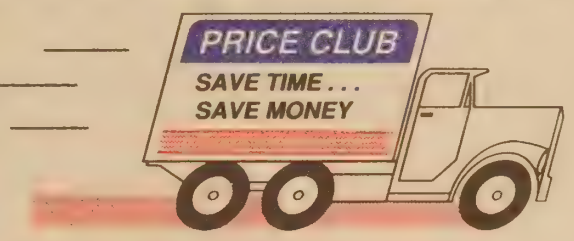

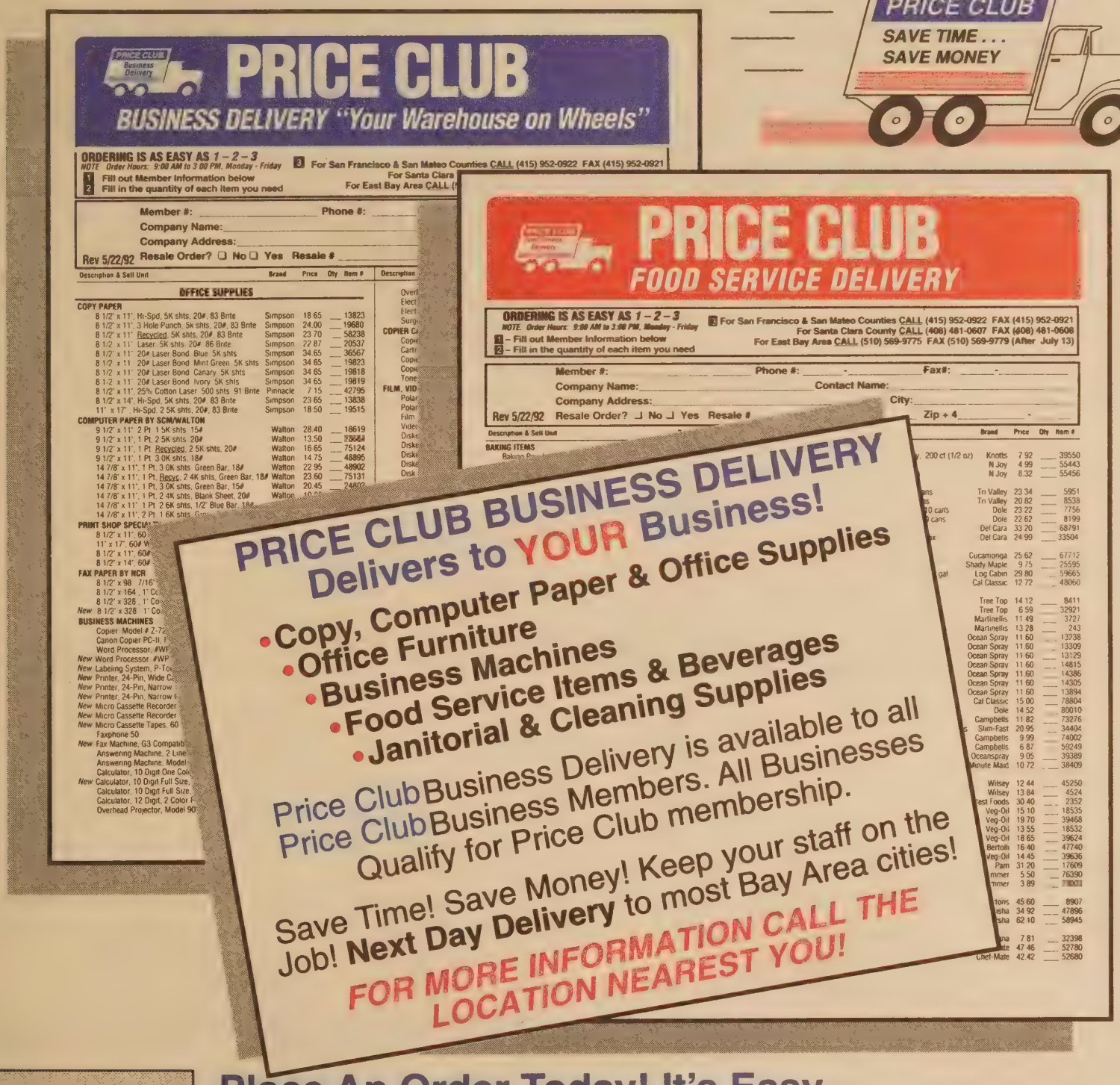

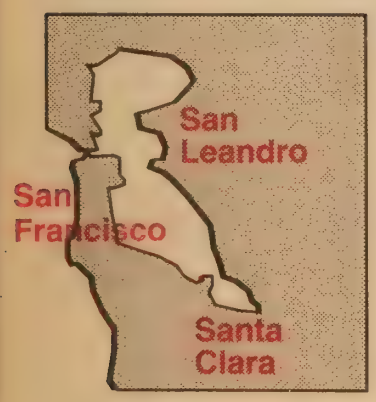

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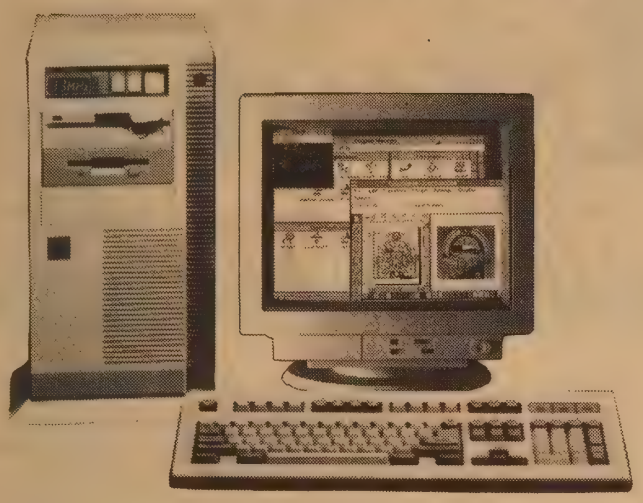

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INDUSTRY INSIGHT

CPU Price Competition: Good News For Buyers

BY PAUL HOFFMAN

COMPETITION HEATS UP THROUGHOUT CPU INDUSTRY

Microcomputer buyers have become used to the constantly falling prices of everything from PCs to mainframes. The impetus behind the falling prices has usually been the falling cost of peripherals and the introduction of new CPUs, forcing down the price of other CPUs with about the same power.

For the first time in the PC industry, prices will drop due to a new factor: competition. Now that the market has many competitorwho can compete on power, Intel is being forced to compete on price. The result will be a rapid price drop for "high-end" PCs this year, even before Intel announces the 586.

For the first time in the PC industry, prices will drop due to a new factor: competition. Now that the market has many competitors who can compete on power, Intel is being forced to compete on price.

Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on Internet (phoffman @well) or CompuServe (71545,346). He also writes popular microcomputer books.

Until last year, Intel had no serious competition in the CPU market for PCs. Motorola's 68000 family of CPUs, mostly used in Apple Macintosh and Sun computers, made an almost unnoticeable dent in Intel's sales. AMD's very successful entry into the middle of Intel's market last year forced Intel into concentrating only on the high-end chips, primarily the 486 family. When Cyrix introduced very competitive 486SX clones priced like 386SX chips, Intel turned up the heat on its marketing campaign to make the 486 the only chip that anyone should consider seriously. Yet 386-based computers continue to sell well, and at least 80% of all laptops sold are based on the "lowly" 386SX.

Cyrix recently turned up the heat even more by announcing that they will enter the 486 market at a low price before the end of the year. AMD, although it hasn't made any specific announcements, is likely to get there first with chips that are even more price-competitive. Intel's major defense against Cyrix and AMD, litigation, is not worrying many computer manufacturers for now, given Intel's recent losses and setbacks.

Intel's next generation of CPU, the 586, will probably be priced so high that it will take a year or two to start putting pressure on AMD and Cyrix. Given that the 486 is more than sufficient for the average user's needs, even when running CPU-hogs like Windows and OS/2, the 586 will mostly be used in high-end applications like network file servers and CAD workstations until the end of 1993. In the meantime, Intel will have to battle to keep a significant footing in the middle of the market.

The best way that Intel can do that is by cutting prices faster than it has in the past. Of course, lower CPU prices will immediately translate into lower machine prices, particularly in systems in the middle of the market. Intel started that movement by slashing the prices of the 486SX to be delivered in the third quarter of this year by around 50%. For the 25MHz 486SX, the price went from $282 to $119.

More important than the actual drop was the compression of the price difference between the fast and slow models of the 486SX. Currently, there is a $140 difference between the cost of a 16MHz and a 25MHz 486SX; in six months, there will only be a $20 difference. Even with significant manufacturer mark-up, this means that the price difference between computers using these chips may be $100, an almost insignificant amount for a 50% faster system.

The 486SX market may not be as prosperous as Intel had hoped. One of the touted advantages of buying a 486SX computer instead of a 486 is the availability of an add-on CPU slot for later upgrading. Intel has just started releasing the upgrades in the form of the OverDrive chip. These chips add the floating-point unit that Intel removed in the 486SX and double the internal speed of the chip. However, many companies testing the OverDrive chip report that the overall speed improvement is more like a mere 40% of the original 486SX at a steep cost: $700 for the 25MHz system. As you can see from many of the ads in *MicroTimes*, for $700 you can buy a new motherboard with a full 486 33MHz CPU on it, making the advantage of adding a chip with a narrower data path seem pretty silly. In the long run, most customers will find buying the higher-powered system a much better bargain.

Intel's price cuts will certainly put a great deal of pressure on Cyrix and AMD. Those companies will have to cut their prices to compete with the company that has the lion's share of name recognition and history in the PC industry. Many people think that Cyrix and AMD can make such cuts, but probably at the expense of R&D in future chips, dimming their long-term prospects. They will survive if they do well in areas that Intel has ignored or been too expensive in, such as low-power CPUs and CPUs with additional

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features (such as better cache management).

The high end of the workstation market also got a similar boost as Texas Instruments (TI) and Cypress announced separate high-end SPARC CPUs. Although SPARC-based systems have made almost no impact in the PC marketplace, they have put price pressure on the high end of the PC market and spurred the interest in UNIX.

The new CPUs, dubbed SuperSPARC (from TI) and hyperSPARC (from Cypress) are significantly faster than the current crop of SPARC systems due to better internal design. Systems using the new chips will push down the price of all SPARC systems, putting further pressure on the PC market. Systems based on the new chips will come out about the same time that 586-based systems become available, forcing users to decide whether to go with a high-end Intel-based system or a low-end workstation based on SPARC or other RISC CPUs.

NOVELL CHANGES NETWARE PLANS

Responding to an outpouring of user demand, Novell has changed significant aspects of future versions of its industry-standard NetWare networking operating system.

In the past, Novell consistently guessed wrong about how many of its current customers would upgrade, always assuming a higher demand than actually occurred. For the first time, Novell is admitting that there should be two product streams, v3.x for current users and v4 for more advanced users and those with larger networks. The next major release of NetWare, expected later this year, will be called 4.0 instead of 3.2, and Novell has committed to keeping the 3.x line alive.

The news of Novell's conversion came as it admitted the failure of the trial balloon it had sent up for 1000-user networks. Two years ago, Novell announced a 1000-user version of 3.1, then rescinded the announcement, then started selling it to selected customers for $25,000 and a mandatory $5000 maintenance fee. As many of the trial users discovered, that system barely limped along if it was used for anything more demanding than simple email; also, many NetWare administration utilities, including those from Novell, didn't work with any more than 250 users. Recently, Novell has committed to supporting 1000-user systems in v4.0 and will stop supporting them in the current version.

Because of the number of people who probably won't upgrade to the next version of NetWare, Novell is going to support both product lines, with v4.0 being much more advanced than the 3.x line. For example, 4.0

INDEX SHEDS POINTS AS INVESTORS ROTATE TO CYCLICAL

It was a rough and tumble month for computer stocks, as the Microtimes Stock Index dropped 79.62 points, or 2.19 %, before finally closing the session ended June 5 at a mark of 3562.74.

During the same period, the Dow Jones Industrials soared above the 3400 level for the first time, reaching as high as 3413. The national benchmark was reined in, however, by a gloomier-than-expected May unemployment report and closed at 3398.69—a 0.87 % increase for the period.

When talk turns to economic recovery, as it often did during the month of May, traders and investors alike turn to cyclical shares. Unfortunately for the shares in our index, most are still considered growth issues, so they were sold by many in order to finance other purchases.

Hewlett-Packard, for example, saw its share price lose $7.88 before finally coming to rest at a price of $72.38. Investors were obviously listening harder to the company's description of its near-term outlook as cautious than to its second-quarter earnings. Earnings which jumped from $0.93 per share during 1991 to $1.28 during 1992.

Lotus' shares were also victimized, as they lost $3.13, or 9.92 %, before ending matters at a price of $28.38. The company predicted during the period that its second-quarter net income would probably be in the $0.45 per share range, significantly below the $0.52 that many analysts had been predicting. The result was, of course, a cut in most analysts' earnings predictions and, consequently, a cut intheir recommendations for the stock.

Apple Computer was another firm feeling the cut of analysts' knives, as its shares fell $7.13 before coming to rest at $54.88.

During the month, Goldman Sachs removed Apple's shares from its recommended list, citing lower earnings predictions for the firm.

The news was not all negative, however, as Microsoft was able to ride news of higher-than-expected Windows 3.1 shipments to a strong rise. Specifically, the firm's shares gained $6.50 before closing at a price of $121.

EXCH	COMPANY	TICKER SYMBOL	CLOSING PRICE 05/08/92	CLOSING PRICE 06/05/92	NET CHANGE IN MONTH	PERCENT CHANGE IN MONTH	P/E RATIO	ANNUAL DIVIDEND RATE	ANNUAL DIVIDEND YIELD	ANNUAL HIGH	ANNUAL LOW
	SOFTWARE										
OTC	Adobe	ADBE	46.75	46.38	-0.38	-0.80	20	0.32	0.69	66.50	37.50
OTC	Aldus	ALDC	22.00	20.50	-1.50	-6.82	14	0.00	0.00	47.75	19.00
OTC	Autodesk	ACAD	34.00	36.00	2.00	5.88	17	0.48	1.33	62.25	23.25
OTC	Borland	BORL	48.63	51.75	3.13	6.43	–	0.00	0.00	86.75	39.50
OTC	Informix	IFMX	34.00	33.50	-0.50	-1.47	20	0.00	0.00	36.00	5.38
OTC	Lotus	LOTS	31.50	28.38	-3.13	-9.92	22	0.00	0.00	40.75	18.00
OTC	Microsoft	MSFT	114.50	121.00	6.50	5.68	37	0.00	0.00	133.25	60.50
OTC	Novell	NOVL	52.38	56.00	3.63	6.92	41	0.00	0.00	65.00	22.63
OTC	Oracle	ORCL	15.50	15.50	0.00	0.00	55	0.00	0.00	21.13	7.88
OTC	Software Publishing (L)	SPCO	13.50	13.88	0.38	2.78	–	0.00	0.00	26.25	11.25
OTC	Symantec	SYMC	39.50	42.25	2.75	6.96	56	0.00	0.00	51.00	19.50
	HARDWARE										
OTC	Apple	AAPL	62.00	54.88	-7.13	-11.49	20	0.48	0.87	70.00	40.25
OTC	AST Research	ASTA	18.88	17.63	-1.25	-6.62	8	0.00	0.00	32.25	14.50
NYS	Commodore	CBU	12.13	11.75	-0.38	-3.09	8	0.00	0.00	19.25	10.13
NYS	Compaq	CPQ	25.00	28.75	3.75	15.00	40	0.00	0.00	37.50	22.13
NYS	Digital Equipment (L)	DEC	45.25	40.50	-4.75	-10.50	–	0.00	0.00	71.75	39.50
OTC	Dell (H)	DELL	28.00	23.13	-4.88	-17.41	14	0.00	0.00	29.00	13.91
NYS	Hewlett-Packard	HWP	80.25	72.38	-7.88	-9.81	19	0.80	1.11	85.00	44.63
NYS	IBM	IBM	93.13	90.38	-2.75	-2.95	–	4.84	5.36	106.38	81.63
NYS	Silicon Graphics	SGI	18.00	17.63	-0.38	-2.08	22	0.00	0.00	29.75	13.25
OTC	Sun Microsystems	SUNW	29.75	26.50	-3.25	-10.92	13	0.00	0.00	36.38	20.75
NYS	Xerox	XRX	72.25	74.00	1.75	2.42	18	3.00	4.05	82.25	51.50
NYS	Tandy	TAN	28.25	28.13	-0.13	-0.44	13	0.60	2.13	32.63	23.38
	CPU'S										
NYS	Advanced Micro Devices	AMD	17.88	15.00	-2.88	-16.08	6	0.00	0.00	21.50	8.38
OTC	Intel	INTC	53.38	50.00	-3.38	-6.32	13	0.00	0.00	68.75	38.50
NYS	LSI Logic	LSI	7.13	7.13	0.00	0.00	48	0.00	0.00	9.88	6.25
OTC	MIPS	MIPS	9.13	9.13	0.00	0.00	–	0.00	0.00	16.63	7.38
NYS	Motorola	MOT	82.13	82.25	0.13	0.15	23	0.76	0.92	83.75	54.00
	COMMUNICATIONS										
NYS	AT&T (H)	T	43.75	42.13	-1.63	-3.71	90	1.32	3.13	44.63	32.88
NYS	BellSouth Corp.	BLS	48.88	47.75	-1.13	-2.30	15	2.76	5.78	52.63	43.38
OTC	MCI	MCIC	32.63	32.25	-0.38	-1.15	16	0.10	0.31	36.13	25.25
NYS	Northern Telecom	NT	38.00	39.50	1.50	3.95	19	0.32	0.81	49.25	35.88
NYS	Pacific Telesis	PAC	42.75	40.88	-1.88	-4.39	15	2.16	5.28	45.00	36.88

KEY: NYS = NEW YORK ASE = AMERICAN OTC = OVER THE COUNTER
(H) = NEW HIGH REACHED IN PERIOD (L) = NEW LOW REACHED IN PERIOD

MARKET DIARY:

ADVANCES	10
DECLINES	20
UNCHANGED	3
NEW HIGHS	2
NEW LOWS	2

MOST ACTIVE ISSUES:

LARGEST DOLLAR GAINER	Microsoft	$ 6.50
SMALLEST DOLLAR LOSER	Hewlett-Packard	$ -7.88
LARGEST PERCENTAGE GAINER	Compaq	15.00 %
SMALLEST PERCENTAGE LOSER	Dell	-17.41 %

	CLOSE 05/08/92	CLOSE 06/05/92	NET CHANGE IN MONTH	PERCENT CHANGE IN MONTH
MICROTIMES STOCK INDEX	3642.36	3562.74	-79.62	-2.19
DOW JONES INDUSTRIAL AVERAGE	3369.41	3398.69	29.28	0.87
STANDARD & POOR'S 500 STOCK INDE	416.05	413.48	-2.57	-0.62
N.Y.S.E. COMPOSITE	229.20	227.88	-1.32	-0.58
NASDAQ COMPOSITE	585.76	585.43	-0.33	-0.06

CLOSING QUOTES FOR GRAPH:

DATE	MICRO TIMES	DOW JONES
10/25/91	3223.68	3004.92
12/12/91	3254.85	2895.13
01/20/92	3961.41	3254.03
02/14/92	3984.10	3245.97
03/13/92	3888.19	3235.91
04/10/92	3566.89	3255.37
05/08/92	3642.36	3369.41
06/05/92	3562.74	3398.69

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Continued on page 34

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DeskPro 486S/25M, 1 Floppy	$2,044
DeskPro 486S/25M, 60MB HD	$2,130
DeskPro 486S/25M, 120MB HD	$2,216
DeskPro 486/33M, 1 Floppy	$2,475
DeskPro 486/33M, 120MB	$2,647
DeskPro 486/33M, 340MB	$3,337

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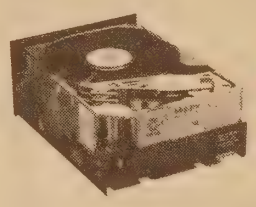

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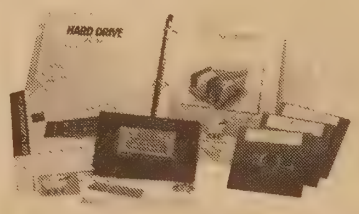

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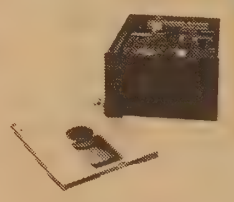

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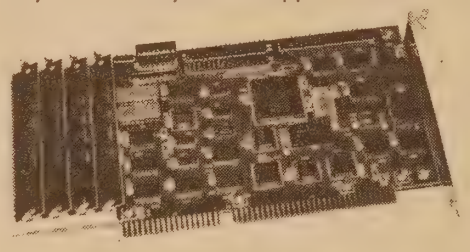

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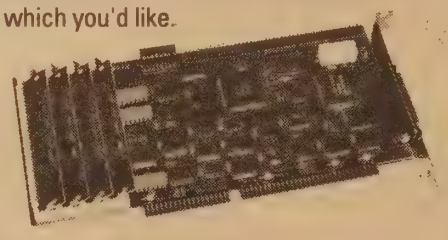

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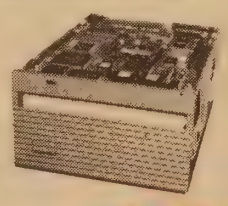

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ESCAPING QWERTY TYRANNY

Our traditional keyboard layout—called QWERTY for its top-left alpha key-sequence—was specifically designed to slow typists down, back when typewriters were mechanical and speed generated jams.

REALIZABLE FANTASIES

The Dvorak keyboard (named after an inventor; not for my fellow computer curmudgeon) is a much more optimal layout, designed for speed. It's been around for decades—but do you know anyone who uses one? Have you ever even se*en* one? Me neither.

We may have no more success escaping QWERTY than the Japanese have had in escaping Kanji. At least not in traditional keyboards. But, something else is happenin', Mr. Jones.

Copyright © 1992 by Jim Warren, 345 Swett Rd., Woodside, CA 94062; email/jwarren@well.sf.ca.us. Permission herewith granted to copy-in-full for nonprofit purposes. *Jim Warren founded* InfoWorld, *the DataCast proposal for paperless electronic newspapers, Wireless Digital, Initiative Inc., and one of the nation's largest public microcomputer conventions. He was founding host of PBS's* Computer Chronicles, *founding editor of* Dr. Dobb's Journal, *and has chaired various computer trade and professionals' organizations. He holds graduate degrees in computing (Stanford), medical information science (UC Medical Center), and mathematics and statistics.*

He organized and chaired the landmark First Conference on Computers, Freedom & Privacy (1991), sponsored by a dozen nonprofit and industry organizations, received one of the first Electronic Frontier Foundation Pioneer Awards (1992), and is a member of the board of directors of Autodesk, Inc.

In the late '60s, Doug Engelbart's group at SRI experimented with "chording" keyboards. These had only five keys. The user pressed several keys simultaneously—like a piano chord—to generate a single character. Now, chording devices are beginning to appear on the market.

InfoGrip offers the BAT—few-key chording pads that plug into a Mac. Rest one hand on a BAT and chord your keyboard input while your other (one-fingered) hand rests on the Mac's (one-button) mouse. Switch to quirky QWERTY only for extensive typing. There's also a pocket computer from England that has a regular keyboard—which, of course, is too small for touch-typing—but also offers a five-key chord-pad. Several people who use it find they learned it with less difficulty than expected and can "type" ten to thirty words per minute with it.

Murphy appears—the BAT and the English unit, of course, use different chording combos for the same characters. And the pocket unit requires the user to orient the device horizontally, as might be expected, but permits it to crawl as one types. Palo Alto's Jay Thorwaldson says it'd be better to position it vertically, so the heel of the palm could anchor its bottom while the fingers of one hand clap the keys.

Chording keyboards won't cure QWERTY, but they can offer some relief in a wide range of applications.

TAXING SOFTWARE

Although legislators will undoubtedly leap to one lip-smacking interpretation, this actually proposes quite another—a fully informed public:

Politicians send a misleading message—the delusion that businesses and corporations pay business and corporate taxes. Nope! They just collect 'em from customers and pass 'em along to the tax collectors. So, let's have businesses tell customers how much tax they're *really* paying for each purchase of products and services.

Put retailer's tax rates for each separate business and corporate tax-charge into their cash registers. Put the same information in every invoicing program. Then—when printing a customer's receipt or monthly invoice—explicitly identify, by percent and itemized amount, how much of what the customer pays is allocated to which "corporate" tax and "business" tax, versus how much the company is actually receiving for the product or service.

Do the same for employee payroll statements. Don't just itemize each employee's "official" federal income tax deduction, state income tax deduction, local income tax deduction, social security deduction, and/or unemployment deduction. Also itemize the company "contribution" to social security, company "contribution" to unemployment, etc. And show the total company "contributions" required for each employee—company-paid government loot for which the employee and employer can't even haggle or bargain. Be sure to show yearly totals. And for *real* truth-in-taxation payroll

"There's only one person who pays 'business' taxes." After all, now that the fifty-year war's over, it's only fitting to revise that "Uncle Sam Wants You!" poster.

reporting, also include itemized pro-rata amounts the company is required to spend for various facilities and benefits for employees—whether they want 'em or use 'em, or not.

And finally—business owners: Begin an ongoing media blitz about hidden taxes. Picture a snarling Uncle Sam, hand outstretched to the reader, palm up and clutching. Caption: "There's only one person who pays 'business' taxes." After all, now that the fifty-year war's over, it's only fitting to revise that "Uncle Sam Wants You!" poster.

Lotsa programmers' opportunities here, folks.

QUICKIES

• Let's use computerized voice recognition to scan C-SPAN—the 24-hour televised proceedings of the US House and Senate, suggests John Nagle (Menlo Park, CA). It could convert speeches into text which could then be stored, indexed, retrieved, and printed as desired. Now, if someone could also program a b.s. detector ...

• A product promotion notion that's gaining momentum, though horrifying some inept public-relations firms: Pay for Results. In the ol' daze, PR folks billed by the job, or by the hour—and the client hoped they were worth it. Now, more and more clients are defining PR payments in terms of number or length of product articles appearing in print, or number of sales leads received from a promotion, etc.

• Patent holders get monopolies for seventeen years. Noting this while objecting to software patents, Jim Rea commented, "Software goes bad faster than milk." Jim founded and owns ProVUE (Huntington Beach), is a multi-decade entrepreneur, and programmer and papa of Panorama, an innovative (and low-cost) database system for the Mac. He'd rather practice programming that promulgate patents.■

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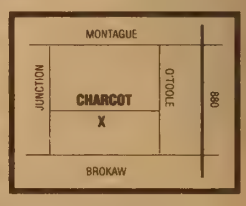

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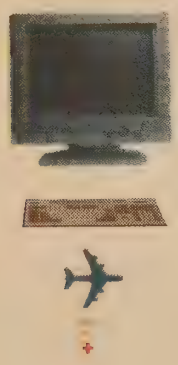

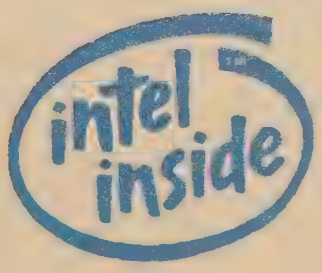

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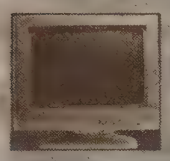

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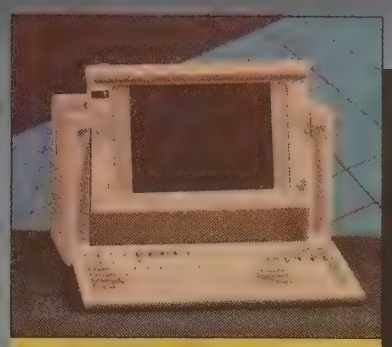

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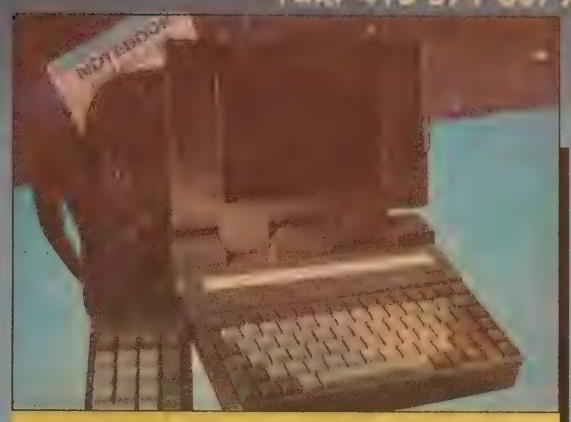

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Continued from page 26

will also support much more advanced network management and tracking, something that has long been promised for 3.1 but not delivered in any consistent fashion. Version 4.0 will also support better connections to other networks in a more predictable manner.

Novell has recently been receiving more criticism for not keeping up with the rest of the microcomputer market. Competing operating systems have been making significant inroads in the sales of new networks and even getting some Novell sites to change over. Most Novell sites readily admit frustration with the archaic installation and updating facilities in NetWare and have started blaming everything from slow response to parity errors on "the network." Other network vendors have taken advantage of this dissatisfaction at the same time UNIX systems, particularly those from Sun, have started replacing PC-based networks.

APPLE BLITZES MEDIA WITH NEXT YEAR'S PRODUCT: PERSONAL DIGITAL ASSISTANTS

For a company that normally tries to keep a lid on pre-announcing future hardware, Apple went all out in trying to capture the hearts and minds of the buying public with its unreleased Newton hand-held computer. By introducing it at the Consumer Electronics Show, Apple made it clear that this new computer, which won't be available until sometime next year, will in fact be a consumer electronics item, not a standard computer.

Is such a computer worth more than ten times as much as an advanced personal organizer? Can many people afford $500, much less $1500, for something that keeps track of their appointments and clients?

Newton will be about the size of a thick novel. It uses a pen interface and has no keyboard. The primary audience will be people who live and die by their calendars, daily schedules, and telephone lists. In fact, the first version of Newton will be about the same size and shape as a fat DayRunner or similar personal organizer. Apple hopes that the automation Newton provides will make people want to spend $1000 for something that can be done on paper for about $35.

The technology in Newton will indeed be impressive to the target market, particularly those who haven't used computers much. You will be able to write in "have lunch with Chris on Wednesday," and the computer will know that you mean this coming Wednesday, that "lunch" means around noon, and that it should warn you if you are already scheduled for something at that time. It will have an expansion slot, and some models will be able to communicate with other computers or even laser printers with no direct connection.

All your input will be in your own handwriting, and Apple assures us that the handwriting recognition in Newton will be good enough by then to read most people's writing (many people remain skeptical about this). It will learn your writing as you use it, although it will probably only work well for one person.

Computers that perform similar functions have been available in Japan for years. Although the controlling software in those computers is less advanced than what Apple says will be in Newton, the Japanese market for pen-based portables is booming.

Still, the same problem exists in Japan as in the US. Is such a computer worth more than ten times as much as an advanced personal organizer? Can many people afford $500, much less $1500, for something that keeps track of their appointments and clients? How many people have such a busy schedule that the current day-by-day paper calendars plus some good phone list software on their PC would not do just as well for significantly less? The Japanese are even more gadget-oriented than we are, as shown by their earlier acceptance of hand-held organizers, but the market penetration there is still small relative to what analysts expected.

Apple will face many challenges with Newton, the main one being the problem of differentiating it from a computer. In 1984, they were able to create a market for the Macintosh when everyone said that there was no room for anything other than PC compatibles. In 1993, they will have to make Newton appear to be an organizer instead of a computer so that the people who have stayed away from computers for the last decade will at least take a look at it, and maybe find it fun enough to justify dropping $1000. ■

High-Tech News From Japan

(Excerpted from the weekly news digest of Japan Marketing Group, 400 Groveland Ave., Suite 312, Minneapolis, MN 55403, 612/871-7889. JMG covers products and events in the Japanese computer industry.)

➤**IBM** has begun shipping a Japanese-language version of OS/2 2.0. The new operating system supports multitasking, and allows MD-DOS, DOS/V, Windows 3.0, and OS/2 J 1.3 applications to run in its environment.

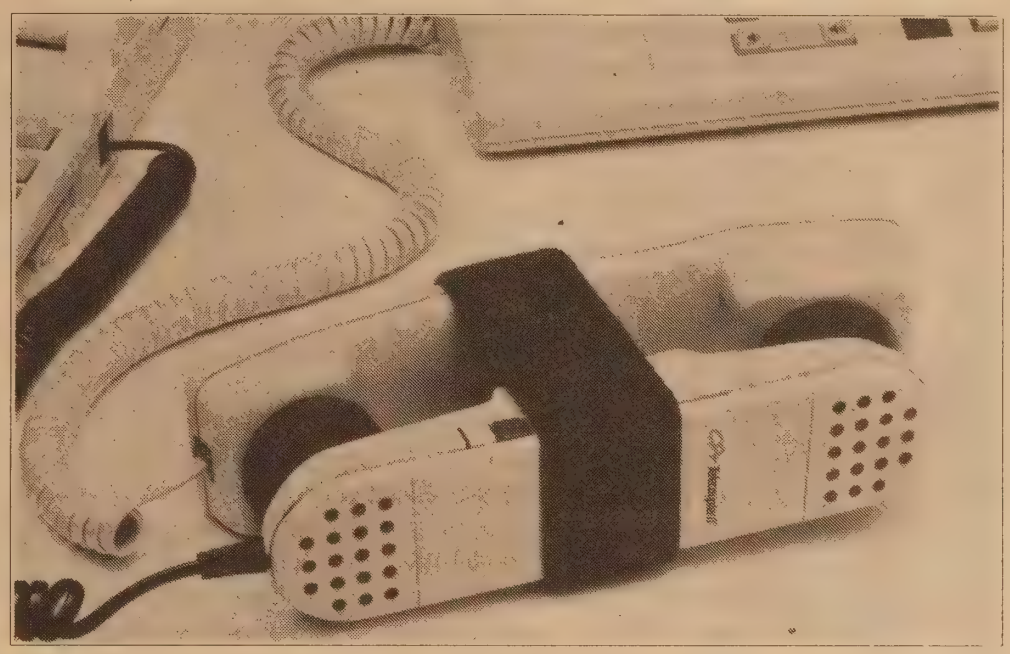
➤**GO** developer of the PenPoint operating system, has entered the Japanese market, setting up a Tokyo office and beginning development on a Japanese-language version of the operating system, which it expects to ship within the year. It has also formed agreements with several Japanese software developers to create PenPoint applications.

➤Digitizer and tablet vendors including **Muto Industry, Hitachi Precision, NS CalComp,** and others are committing more resources to pen-based input devices, hoping to find new uses for the pointing technologies they've developed for their digitizers. This move comes in response to analyst predictions that the market for pen-based computers will be substantially larger than that for digitizers.

➤**Kyocera** has developed a new printer, the ECOSYS asi, which it claims is so durable that it eliminates the need to change cartridges. The printer was well received at spring COMDEX; it uses an amorphous silicon drum as the photosensitive medium, and Kyocera claims it lasts up to seventy-five times longer than conventional laser printer cartridges. The company has not announced pricing, but expects the printer to be available in the US in June.

The Universal Modem Connector

With The Telecoupler II The Only Thing That Can Stop You From Connecting Is Not Having A Phone



BY ED KAHN

Laptop users are increasingly relying upon modems and fax/modems to send and receive data. At home, making a good telecommunications connection is generally not a problem, but on the road, there is *always* the possibility of frustration because of a lack of simple connection options. Hotel rooms frequently lack the basic RJ-11 jack that provides the best, cleanest, direct connection for modem users. Pay phones rarely, if ever, offer a simple way to connect a modem, fax, or notebook computer to the phone line.

Over the years, various products have been made available to facilitate calling in some of these less convenient locations. Computer Products Plus recently introduced its Telecoupler II, a device that lets you connect through any standard telephone handset. This product, weighing only 9.2 ounces, is the Cadillac of on-the-road coupling devices.

Basically, the Telecouple, II attaches to the phone handset with a Velcro strap. It will handle fax and data transmissions up to 9600 baud and will automatically move to a slower speed depending upon the modems, line noise, and other factors.

The Telecoupler II is powered by a 9V battery which automatically turns the device on and off when it is activated by a modem. Under normal use, the battery will last up to fifty hours. A low battery indicator lets you know when it is time to change batteries.

The device receives fax or data communications through a microphone and sends signals through a speaker; these are placed next to the telephone earpiece and mouthpiece, respectively. If the line signal is weak, there is a signal level switch that lets you increase the volume as much as necessary to achieve a good transmission.

The back of the Telecoupler is covered with small rubber pads designed to reduce vibrations when the device and phone handset rest on them. This helps avoid extraneous noise and vibrations. Computer Products Plus seems to have thought of everything when they designed this device.

Although using the Telecoupler II involves nothing elaborate, it comes with an extensive owner's manual. At first, it seemed a bit unnecessary, but as I read through the documentation, I realized that they have really thought about the problems that you are likely to encounter when there is no convenient RJ-11 jack around, and they have alerted you to each kind of difficulty you might find.

Acoustic couplers are often the best connection available, but ideally it is still better to make a hard wire connection. Telecoupler II is available in either a standard configuration ($159.95) of the device by itself or as part of the Tele-Toolkit ($199.95).

The larger package has all of the tools and accessories you need to help you avoid using the acoustic coupler. The basic concept is that you should do everything you can to avoid using the Telecoupler II and to make a hard wire connection. The Toolkit provides you with both the instructions and the means to do this. There are instructions and a screwdriver to help you remove wall plates, handset mouthpieces, and the microphones that are inside.

In addition to the screwdriver, there is a line that has an RJ-11 plug on one end and a pair of alligator clips on the other end. This is a particularly useful gadget as it allows you to make a hard wire connection in a wide variety of circumstances. The documentation is specific about how to make these connections.

A flashlight is provided to help you see what you are doing. A knife is included so you can do surgery to telephone lines when there seems to be no other alternative. And a host of telephone jacks and connectors are in the kit so you can hook different lines together. Finally, a carrying case is provided which holds these accessory tools as well as the Telecoupler II itself. There are even extra pouches large enough to hold a pocket modem and other items you might need in the course of modem or fax operations when you are away from home.

Telecoupler II is designed for the most hardcore user. You will be glad you have it when you need it and kick yourself for not having it when you find yourself in front of a strange telephone and unable to complete a connection. ■

RESOURCES:

Telecoupler II, $159.95
Computer Products Plus, Inc.
16351 Gothard St.
Huntington Beach, CA 92647
1-800-274-4277

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Computer of the Month: Samsung NoteMaster 386S/25

The NoteMaster, Samsung's newest computer, is an exciting 5.8lb. notebook unit that features a removable hard disk. Adaptability and expandability are the hallmark characteristics of this machine. The basic machine is a standard notebook built around a 25MHz, 386SXL processor. This is a well-thought-out machine that offers lots of features for under $2000.

The NoteMaster comes standard with 2MB of RAM, expandable to 8MB. The memory modules are relatively expensive at about $300 for each additional 2MB.

The display is a 10" sidelit VGA that handles sixty-four shades of gray. If you prefer, a color monitor is easy to attach through the video port on the back. To switch to the external display, it is necessary to press both the Fn key and one of the function keys.

The keyboard has a good feel that works well in a pinch. Like most notebook units, basic functions require a second key to be used with the Fn key, such as Fn+Home, PgUp, PgDn, or End. There is a port that accepts any PS/2-compatible keyboard, numeric keypad, or mouse. There are also a serial port and a modem option ($249). If you need both an external keyboard and a mouse, you can connect the mouse through the serial port.

The Samsung has a sophisticated battery arrangement that offers great flexibility. The included nickel cadmium battery runs the computer for two to three hours. It automatically recharges with the AC power supply in about three to four hours. A quick charge unit ($199) is also available. There is also space inside the NoteMaster for a supplemental battery ($99) that fits into the modem compartment. This provides an additional hour. An optional alkaline battery holder ($69) uses eight standard alkaline AA batteries to replace the nickel cadmium power source. This also gives you an additional hour of power, but cannot be used at the same time as the auxiliary battery that fits into the modem slot. A final option to consider buying is an additional nickel cadmium battery pack ($149). By using various combinations of batteries, you can significantly extend the battery operating time of this machine.

The unique feature of this computer, however, is its hard disk. The NoteMaster comes standard with a 40MB hard drive, but 60MB, 80MB, and 120MB versions are currently, or will soon be, available. Unlike some portables that have removable hard drives, Samsung does not limit you to their proprietary drive. Rather, the NoteMaster accepts many different brands of 2.5" hard disks. This should go a long way to keep down the cost of a larger drive.

To make the system truly useful, Samsung offers two ways to slip the removable hard drive into your desktop machine. The first option is to install an internal disk drive receptacle ($249) into any free 5.25" bay. The hard drive from the portable slips into the bay and functions as drive D. A second option—which will also work on other portables—is to use an external receptacle ($419) which connects through a parallel port.

Either method makes it easy to move your hard drive from one computer to the next. It also facilitates locking drives away in a safe place to protect sensitive data and having drives for each employee. The possibilities are endless and this system seems to work.

This computer comes with a twelve-month warranty, including parts and labor. Documentation is excellent, although there are the typographical errors one often finds on products of Korean origin.

MS-DOS and a variety of utilities are included with the NoteMaster. A small carrying case comes bundled with the package, but a larger, more spacious case is available for $99, which has room for the AC adapter and other accessories you might like to carry with your portable. ■

RESOURCES:

NoteMaster 386S/25, $1899
Samsung Electronics America, Inc.
301 Mayhill St.
Saddle Brook, NJ 07662
1-800-446-0262

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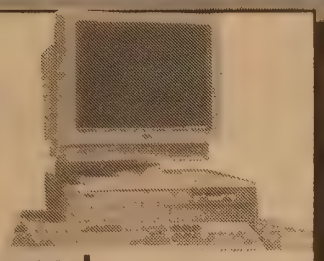

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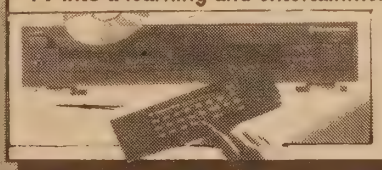

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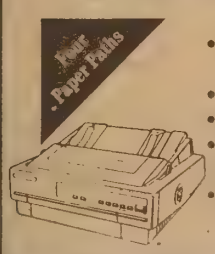

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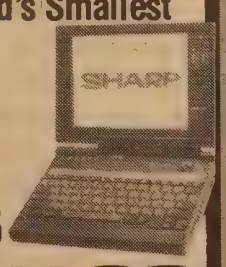

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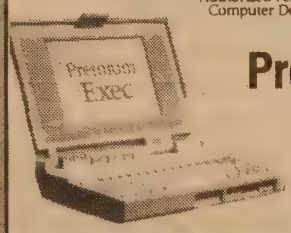

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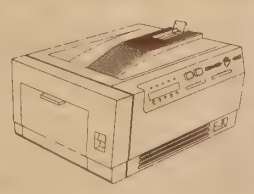

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Faxing With The PowerBook

The 6.8-Pound Paperless Office

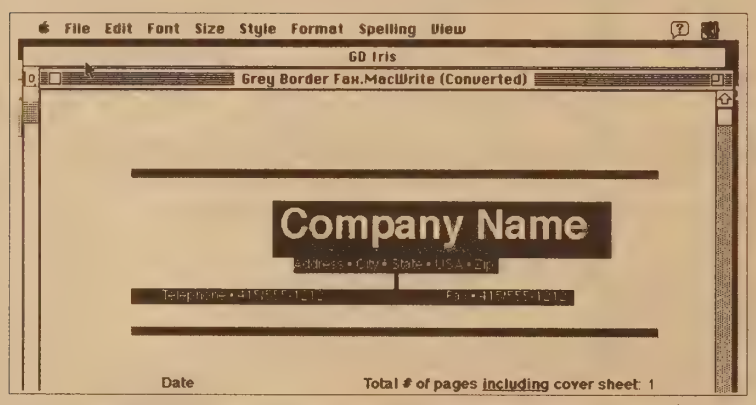
BY MARY EISENHART

One of the many ways the PowerBook changed my life is that my "office" goes where I do. Whether it's reading the email from the press room at Spring COMDEX in Chicago or faxing in the cover type from the San Francisco Civic or transcribing an interview while on an airplane, I'm more productive and increasingly tetherless.

Now that my PB170 has a modem that both sends and receives faxes, it's even easier for deadlines and other occupational crises to follow me to remote locations, but it's also easier for me to deal with them quickly without endless rounds of phone tag.

THE POWERMODEM

I haven't seen any surveys, but I'm inclined to think that the first thing most users change about their stock PowerBooks is the modem.



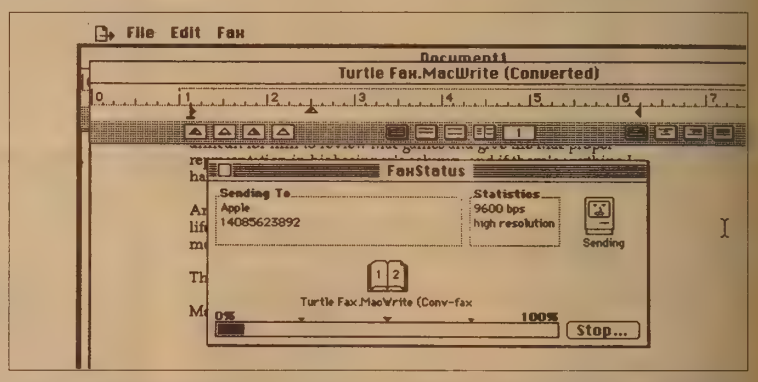
In FaxMania, it's easy to customize the existing cover sheets using standard Mac editing tools.

Modems have never been Apple's strong suit, and the one initially bundled with the 170 was no exception. Aside from the fact that it wouldn't receive faxes, its data modem component (on two different PowerBooks I tried) was inclined to be finicky—text file uploads to The WELL (copy-and-paste as well as text transfer), for instance, became hopelessly garbled unless significant delays between lines and even between characters were introduced. This becomes an astonishing nuisance.

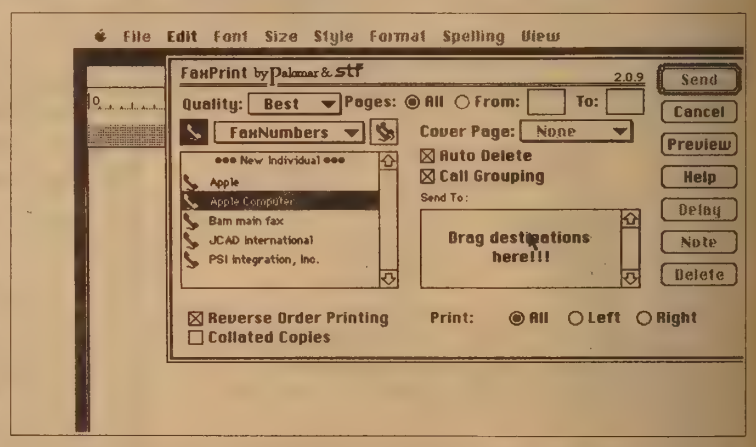
Apple seems to have come to this realization and unbundled the modem. This is a Good Thing. An even Better Thing is that the list price on a modemless 170 with an 80-meg hard drive is the same as the list price on the modemed model with a 40-meg drive (the only configuration available when the 170 was introduced last fall). Since the too-small hard disk is probably the *second* most frequently replaced piece of stock equipment, I cannot recommend the 80-meg version heartily enough.

The PSI PowerModem, like the Apple modem it replaces, is an internal modem. As with the Apple modem, its data speed is 2400 baud, its fax speed 9600. Unlike the Portable's ComPort, which was simple to install (so simple that I once installed it in a Portable sitting outside on a dusty loading dock at Apple, and it works fine to this day), this one requires installation by an Apple certified technician. In all seriousness, opening up PowerBooks is probably not a good idea for The Rest Of Us.

(If you don't want an internal modem, particularly if you need to move a faxmodem from another Mac to your PowerBook, Global Village makes an excellent one called the TelePort FullFax, which we'll review at a later date. But for no-hassle portability, which in my case usually entails carrying the PB around like a book, the PowerModem is hard to beat. Of course, when the PowerBook is dead, so is the PowerModem. Life is, alas, full of tradeoffs.)



The FaxPrint software included with the PowerModem makes it easy to route and monitor your fax transmissions.



Just about all the faxmodem software I've used in the last couple of years is reasonably intuitive and works fine, but the FaxPrint software that comes with the PowerModem remains my favorite. It gives you detailed progress reports on your transmissions, handles multi-destination faxes gracefully, and is generally a pleasure to use. For one thing, as I discovered in the midst of a remote-location deadline crisis, it doesn't need me to figure out how to make it answer the phone and receive a fax, it just does it.

Also, every faxmodem I've used over the last year or so has consistently refused to connect with a couple of fax machines (one in this office, one in Japan) I transmit to quite frequently. This has diminished their usefulness considerably, and nobody's ever had a satisfactory fix (or even a satisfactory explanation!) for the problem. The PowerModem connects with both of them (and every other machine I've used it with) like a champ.

(There is one Known Bug in v2.0.9—the current version—of the FaxPrint software. As it was explained to me, it doesn't let go of the serial port, so the PowerBook doesn't go into automated sleep, regardless of how you've set the control panel. Once you know this, it's not a big problem—it's easy to put the machine to sleep from the Battery DA. PSI says a fix is in the works.)

BEYOND THE BORING FAX

Of course, Mac users being what they are, the proliferation of Mac-based faxmodems has led to the proliferation of cool-looking fax cover sheets. With a little importing of graph-

RESOURCES:

PowerModem, $299
PSI Integration
1-800-622-1722
408-559-8544

FaxMania, $39.95

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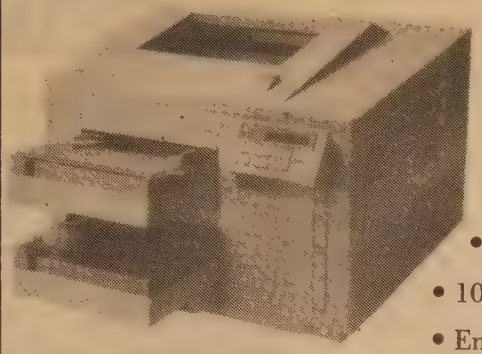

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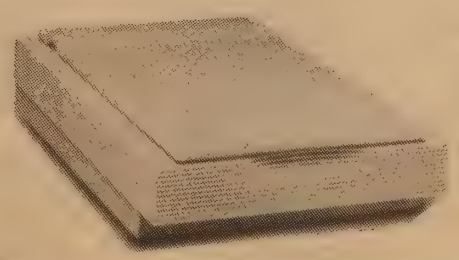

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Unlike earlier versions, which required a pretty counterintuitive mailmerge-like importing of information, FaxMania cover sheets open up directly in your word processor, where you simply type in the necessary information. Not only does this make it simple to create the cover sheet, it also allows you to save the cover sheet in the same file as the faxed document.

FaxMania includes eighty different cover sheets, ranging from the businesslike to the silly. They come in versions for most of the common Macintosh word processors (the manual includes advice as to which formats work best with the less-common ones). The cover sheets are stored in compressed form on floppies—and since all eighty together account for nearly 2 MB of disk consumption, you'll probably want to consult the thumbnail-sized images in the back of the manual to decide which ones you'll want to uncompress. Especially if you've got a 40-meg drive.

FaxMania offers lots of options for personalizing your faxed messages.

Once you've decided which fax sheet you'd like to use, you can also customize it inside your word processor—substituting one graphic for another, for instance, or changing the typeface and formatting to correspond to your main document. You can, for instance, substitute your company's logo for "Don't Have A Cow, Man!" You can also copy and paste "Don't Have A Cow, Man!" into some strategic portion of a normal word processing document you're laser printing—the graphics can be moved, resized, stored in the Scrapbook, etc. At $39.95 list, FaxMania is a useful add-on to your faxmodem, whichever model you may decide to use.■

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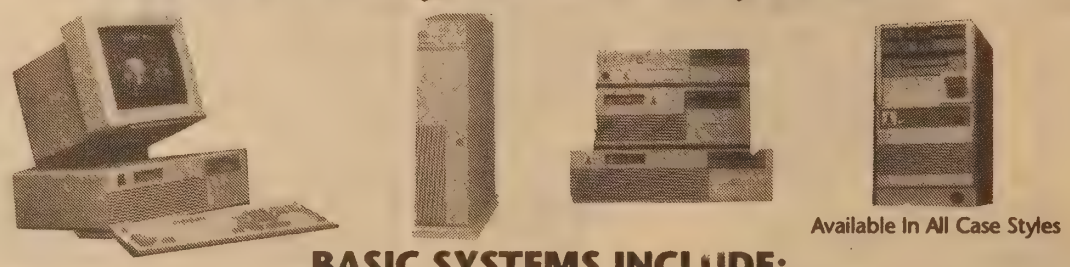

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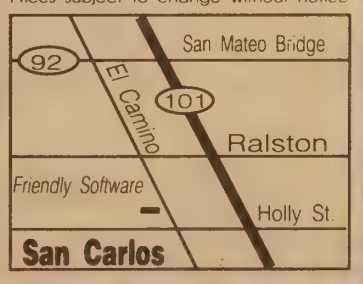


Write, Draw & Paint With UNIX

As More Businesses Discover UNIX, Island Write, Draw & Paint Is Becoming An Important Part Of The New, Networked, UNIX-Based Office

BY MARSHALL SMITH

As powerful UNIX workstations invade the PC-based office world, software companies are developing word processing and desktop publishing programs designed to utilize the power of the operating system while still being easily accessible to someone who isn't a UNIX wizard. One of the earliest and most successful efforts at "off-the-shelf UNIX applications" is Island Write, Draw & Paint, from San Rafael-based Island Graphics Corporation.

"Many of the users of Write, Draw & Paint are engineers or circuit designers who need to write memos and reports," says Joseph Foy of Sharp Microelectronics Technology. "We have a significant number of engineering workstations and IslandWrite gives them an easy-to-use word processor that allows them to remain on their UNIX workstations and still generate the text they need. They also liked the desktop publishing aspects of Write, Draw & Paint. The software allows them to insert graphics such as photos or circuit designs into their documents."

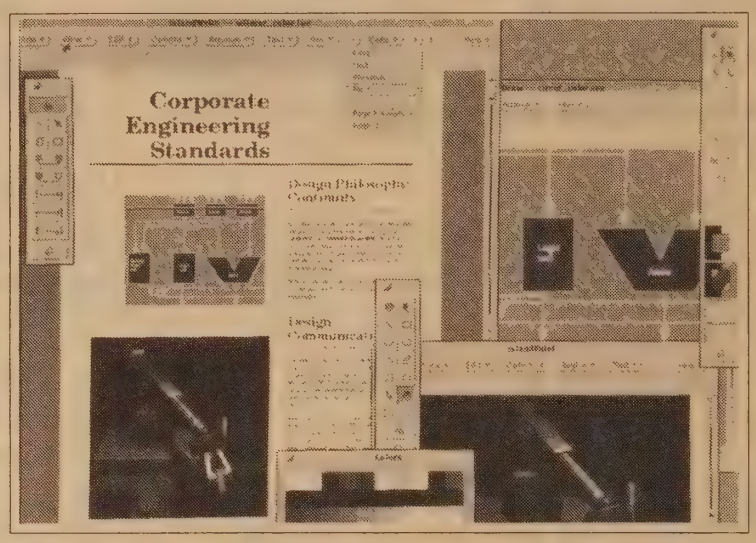
Foy investigated several other desktop publishing programs for UNIX-based machines before choosing Write, Draw & Paint.

"Other desktop publishing programs I examined were considerably more expensive. While I found some that were more powerful, offering many features I liked, I thought most of the other programs were more complex than the engineers would like to use on a day-to-day basis to generate reports and memos."

Simplicity and connectivity are two of the key features that have enabled Island Write, Draw & Paint to lead the pack in the race to become the dominant word processor and desktop publisher in the rapidly growing world of the UNIX-based office.

"More and more engineering firms want to bring the entire company onto the network," states David Newman, marketing manager of Island Graphics. "The trend is to have everyone, from bosses and administrative assistants to tech writers, have them all hooked together on the UNIX computer network used by the engineers. File sharing and communications are easier. Compatibility is less of a problem. Plus it's a matter of desk space. An engineer with a workstation or X terminal on his desk doesn't want a separate computer sitting there using up space just to produce documents. Island Write, Draw & Paint gives the user a simple method of generating documents that include graphics from UNIX engineering programs."

Students at Purdue University in Indiana have been using Write, Draw & Paint since it was introduced in 1989. The WYSIWYG features of Write, Draw & Paint allow the students to see what their finished documents will look like so they can be edited and polished before printing them out. This has greatly improved the quality of the students' documents, and both students and instructors routinely import graphics into their documents from AutoCAD, GRASS, Gremlin, and other UNIX graphics programs.



Students at Purdue University in Indiana have been using Write, Draw & Paint since it was introduced in 1989. It has greatly improved the quality of the students' documents.

Island credits much of the success of Write, Draw & Paint to its ease of use, PC pricing, and growing distribution network, all of which are new to the UNIX marketplace. David Newman describes the program's accessibility as a designed-in feature. "You can buy it from your local UNIX reseller and install it yourself. You have to set a few pointers to where things are, just like in any UNIX application, but it's basically a simple process. When you buy the program you get thirty days of free technical support so you can call us if you have any questions with the installation. You don't have to be a UNIX guru to run this software."

When asked about Island Write, Draw & Paint's compatibility with the various versions of UNIX that are appearing on the market, Newman explained how versions of Write, Draw & Paint are available for each of the leading versions of UNIX, such as Sun, SPARC compatibles, HP, IBM, DEC, Silicon Graphics, and others. "We support both the Open Look and Motif graphical user interfaces. And as UNIX moves to the Intel platform, so does Write, Draw & Paint. It's already available for SCO Open Desktop. It was the first application to be demonstrated on SunSoft's new Solaris 2.0 for Intel's X86, and it'll be available when that ships. Write, Draw & Paint will also be available on UnixWare, the new version of UNIX recently announced by Univel, a joint

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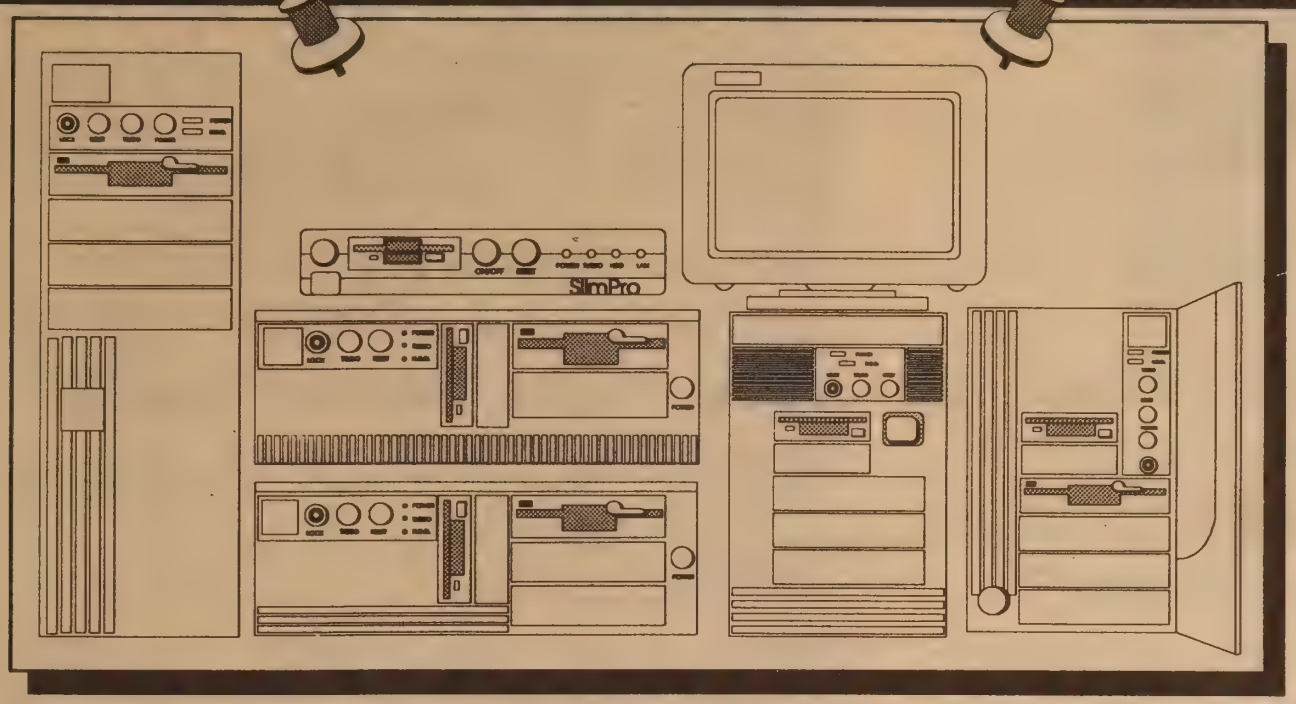

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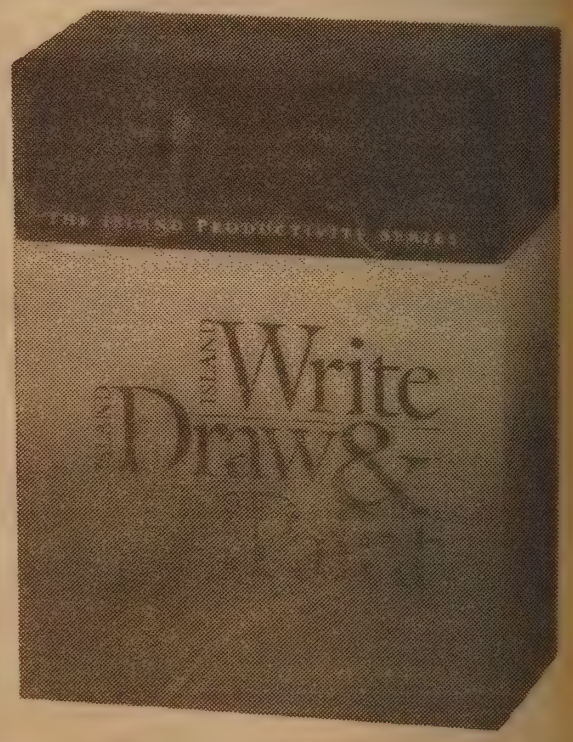
venture of Unix Systems Laboratories and Novell."

Island Write, Draw & Paint is really three separate software programs. While together they form a solid desktop publishing package, each component is also a powerful standalone application. IslandWrite is a word processor and desktop publishing program that has a wide variety of features, including thirty-five typefaces, a multi-lingual spell checker, footnotes, endnotes, automatic table of contents and index generation, multiple columns, and variable word and letter spacing. There are print drivers for PostScript laser printers and the HP LaserJet and PaintJet printers. Version 3.0 features advanced mail-merge capabilities. Containers can be created and graphics imported from Draw, Paint, TIFF, or encapsulated PostScript graphics. Text flows automatically around or within irregularly shaped containers for newsletters or data sheets. A zoom mode allows close-in WYSIWYG work or editing of two pages at once.

IslandDraw is a vector graphics editor for editing technical drawings and creating block diagrams and illustrations. The toolbox contains geometric shapes which are made up of Bezier curves. IslandDraw graphics can be cut, copied, pasted, flipped, or scaled and rotated to any degree. All drawings are resolution independent and can be enlarged or reduced with no loss of information.

IslandPaint is used to edit scanned photographs and screen dumps. It can also be used to create original art. IslandPaint allows you to crop and scale raster graphics and has the capability to display 256 colors on-screen from a color universe of sixteen million colors. There are unlimited combinations of brush and fill patterns. Multiple transparency modes and irregular region selection allow easy moving of odd-shaped areas. IslandPaint reads and writes other formats including Sun Raster, MacPaint, and X11 bitmaps and X Window screen dumps.

Version 3.0 of Island Write, Draw & Paint



contains filters that allow easy importing of files from a host of software packages, including Lotus 1-2-3 spreadsheets, FrameMaker, Interleaf, Word, and WordPerfect documents, as well as PostScript, CGM, and HPGL files for compatibility with drafting programs such as AutoCAD, and graphs created with Lotus 1-2-3.

"Write, Draw & Paint allows us to make good use of the ability of the SunSoft Solaris

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...SHOP THE REST, COME TO THE BEST...

Deskset Tools to take a snapshot of whatever is on the workstation screen," says Lt. Commander Mike Rieger of the Support Office for the US Navy Fleet Office in Alameda. "The SunSoft Deskset saves the screen snapshot to disk as a file in a Sun Raster graphics format. We bring the snapshot into IslandPaint and manipulate it, choosing whatever part of the graphic we want. It's easy to enlarge the image, shrink it, color it, or whatever. We've created very good user's manuals for some of the database programs we use. It's a very effective way of presenting new concepts in a software guide. The snapshot shows you exactly what the computer screen should look like when you're working on a specific problem. Plus the compatibility of Write, Draw & Paint makes it easy to do things like import WordPerfect files into IslandWrite and then insert whatever graphics we want into them."

When asked if there were any problems that he'd run into using Write, Draw & Paint on a daily basis, Commander Rieger mentioned one feature he thought was missing from the package. "No online thesaurus. IslandWrite is a powerful word processor and spell checker but it has no online thesaurus, which is a feature I like to use when composing documents."

Island Write, Draw & Paint looks like the clear leader in the race to get the first Mac-like word processing and desktop publishing package into the world of the networked UNIX office. As UNIX workstations become affordable for any business that can benefit from the power of the UNIX operating system, Island Write, Draw & Paint can be an important part of their UNIX office. The fact that it's the least expensive software package of its kind available today, certainly doesn't hurt. Island Write, Draw & Paint gives good value for the money, which is more than can be said about a lot of UNIX software. Upcoming versions will contain several new features requested by users, including an online thesaurus. ■

Simplicity and connectivity are two of the key features that have enabled Island Write, Draw & Paint to lead the pack in the race to become the dominant wordprocessor and desktop publisher in the rapidly growing world of the UNIX-based office.

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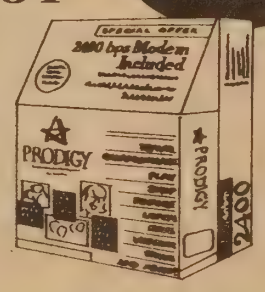

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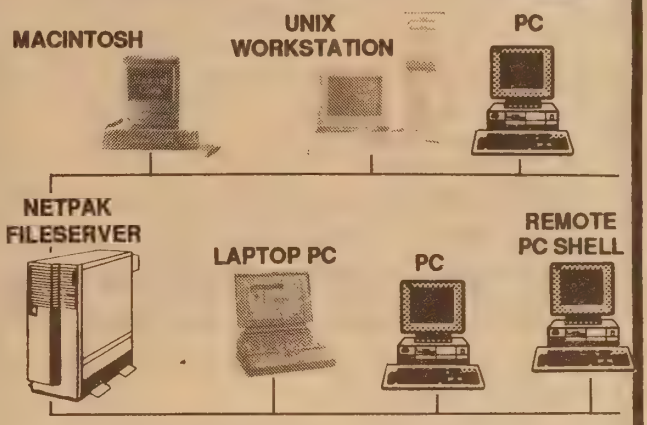

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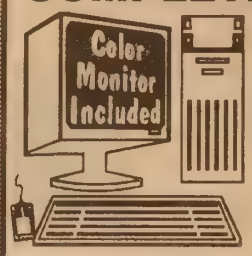

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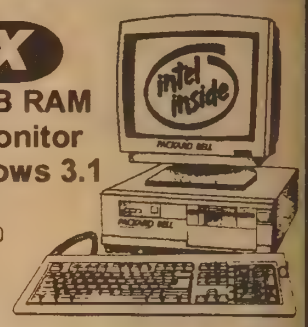

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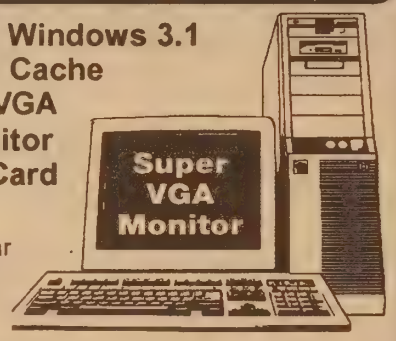

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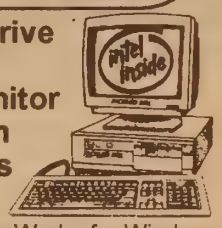

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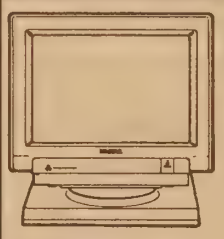

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A1	Compatibles PC's for the next 10 years: Non-Intel CPU's come of age
A2	Marketing PC's in a commodity/price war environment
A3	Build or buy- resellers look at the new "OEM" environment
A4	Trade and marketing between the USA and Hungary Chairperson: Andy Hadju, Control, Inc.
Tuesday Sept. 22	**Keynote Speaker: VP of IBMs OS/2 OEM Division**
B1	East-West Partnership
B2	Creating Company & brand identity in a crowded marketplace
B3	Trade and marketing between the USA and Yugoslavia Chairperson: Dejan Veselinovic, Racunari Magazine
B4	Channel strategies for technology entrepreneurs
Wednesday Sept. 23	**Keynote Speaker: Richard Fade, Dir. of OEM Marketing for Microsoft**
C1	Beyond the Windows PC: Alternative Operating Environments
C2	Emerging technologies for the next ten years
C3	FCC Regulations and Compliance with Federal Agencies
C4	Notebook Revolution: Nomadic computing comes of age
Thursday Sept. 24	**Keynote Speaker: Industry Specialist**
D1	Where is the next market opportunity for PC's?
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D3	Market Strategies for VAR/Consultants
D4	Taiwan PC Industry: The Next Ten Years

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September 21-24, 1992
Las Vegas Convention Center
Las Vegas, Nevada, USA

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Sept. 22	9am-6pm	TUES
Sept. 23	9am-6pm	WED
Sept. 24	9am-4pm	THURS

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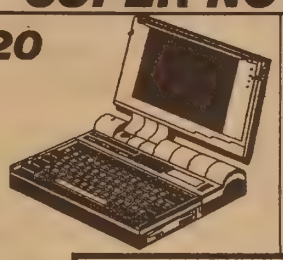

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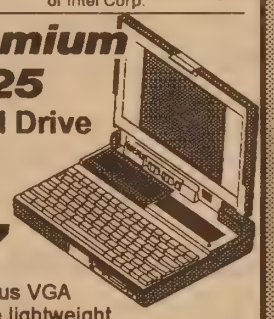

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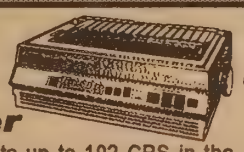

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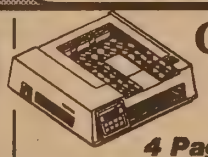

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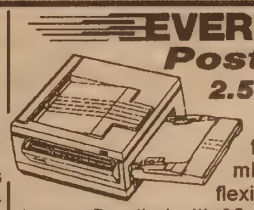

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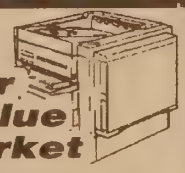

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Building A Link Between PC And Macintosh Networks

MACLAN Connect Provides The Missing Link That Lets You Share Information Across PC And Mac Local Area Networks

BY MICHAEL ROBIN

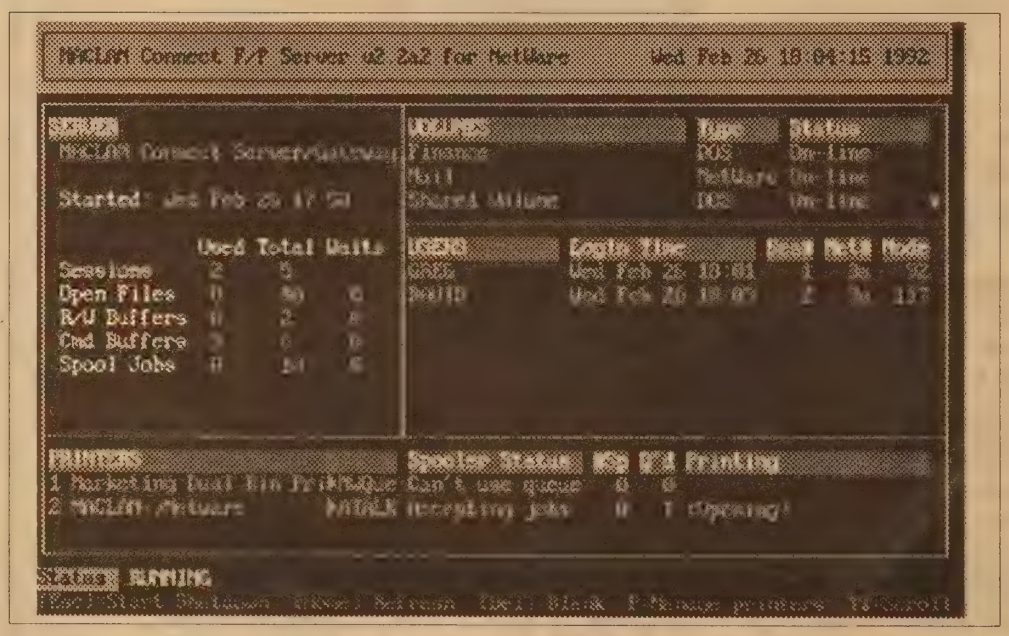
Richard Mednick, owner of Graphic Camera Services (GCS), describes his business as a "corporate visual communications company." Originally, they were a slide company, creating optical and computer graphics, predominately with Macintosh-based systems: two Mac IIci's with 180MB hard drives and 18" monitors, running System 6.0.5, a Microtek slice scanner, and a flat-bed scanner.

Last December, GCS expanded to offer 2-D and 3-D computer animation services. Mednick and his staff chose a PC-based animation system, running on a 33MHz 486. Although they felt that a PC-based animation system was the right choice, they were unsure how the two systems—Mac and PC—would work together; how they would share peripherals and exchange files.

Mednick explained that "I really didn't want to spend additional money to put in another set of scanners for the animation system. I had my vendor link up a network going from the Mac to the PC."

GETTING THERE AND BACK AGAIN

Linking a network of computers, that is, building a local area network (LAN), has become almost as common as the computers it connects. While LANs have become easier to install, use, and maintain, they are overwhelmingly used within single-platform environments—in other words, an office of all PC or all Macintosh computers. Many offices, in fact, have separate LANs for Macintosh and PC workgroups.



Macs and PCs are often both adopted in a single office, but for different purposes, such as PCs for accounting and Macs for desktop publishing. They have tended to remain fairly isolated from each other. This works OK when the workgroups do not need to share information or resources. But what would you do when you needed to bring the financial data from a PC in Accounting to your Macintosh so you can finish designing the company's year-end report? Or when both Macintosh and PC users need to share the only available laser printer? Like Richard Mednick at Graphic Camera Services, others find there is a growing need to "link up a network going from the Mac to the PC."

As the volume of the data to be transferred across LANs between different types of machines has grown, the need for easier, quicker, more secure methods has also increased. Users are also looking for ways to share printers, external drives, file servers, and other peripherals. File conversion and transfer utilities, resource sharing methods, and cross-platform email applications have been developed to help people working in a mixed computing environment solve these problems. But, many of the choices are seen as complicated and expensive (such as adding NetWare for the Mac to a PC NetWare office) or insufficient and slow (such as a file conversion utility and sneaker net).

MACLAN Connect, from Santa Barbara-based Miramar Systems, offers a unique, effective network solution for the usual trio of needs in a mixed Macintosh-PC workplace: to share files, to share peripherals, and to share email across platforms. MACLAN Connect software turns a PC into an AppleShare file server. This PC, with both a PC and Mac network interface card, becomes a gateway between the two otherwise separate networked workgroups.

CREATING A BETTER PICTURE

MACLAN Connect running on a 486 was installed at Graphic Camera Services to share files between their Macintosh and PC systems. This allowed GCS to expand its services and more fully utilize all of its equipment.

"When we create something on the Mac for backgrounds or type," said Mednick, "we can scan it in and it goes instantly to the PC. If we are creating a graphic in a paint program on the animation system, we have the capability of saving a high-resolution Targa file that we might want to incorporate into one of our slide producing programs on the Mac. We will create it as a Targa file, then send it over to the Macintosh, and convert it from a Targa to a PICT file. The results are fantastic."

EQUAL ACCESS, EVERYWHERE

The spread of Windows and development of software versions for PCs and Macs has eliminated many of the problems companies had with training people to work in a mixed computing environment. It is important that people can move from machine to machine, but the older file transfer programs often required people to carry floppy disks between the machines.

Computer Using Educators, Inc. (CUE) has six Macintosh computers, connected via an AppleTalk network. CUE produces many publications, and according to Director Hal Gibson, they use their Macs "for all the pretty things we need to produce." On the PC side, CUE also has about six computers, used mostly for accounting and business applications, on a LANtastic peer-to-peer network.

"I was trying to look for a simple bridge between the two systems," said Gibson. "We have long used things like the Mac bridge products

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Woodland Hills, CA 91367
(818)703-5122

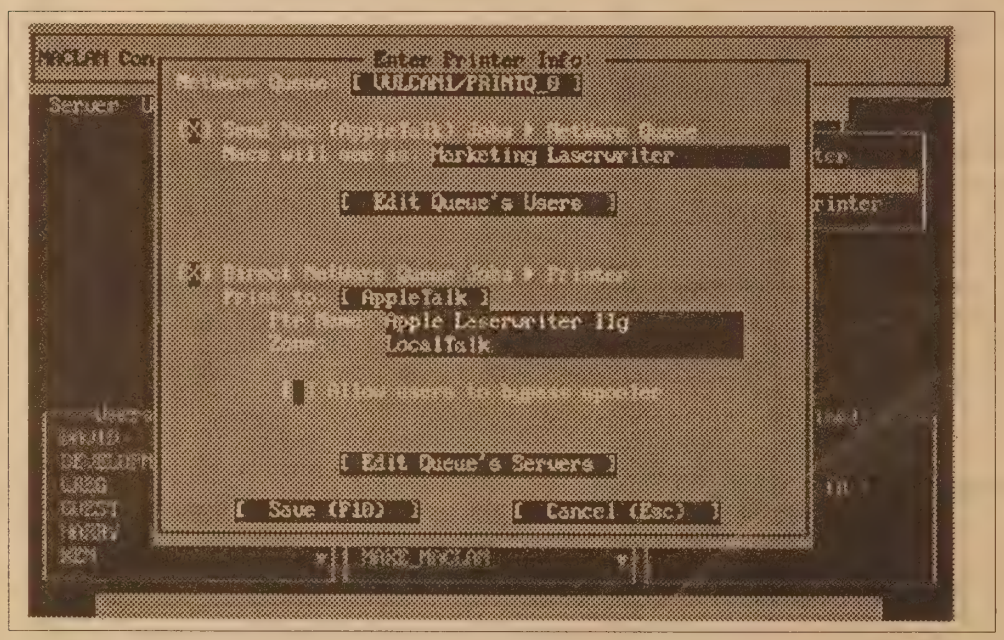
Computer Using Educators, Inc.
4655 Old Ironsides Dr.,
Suite 200
Santa Clara, CA 95054
(408)496-2935

to do file translation. That's OK, but you are still moving via floppy. So what we're trying to do is look at a long-term solution. For instance, moving our database files to the Mac so we can do some pretty mailing labels or whatever the job was. Sometimes that is bigger than a floppy.

"A couple of the hardware/software people I work with suggested [MACLAN Connect]. It wasn't everything I wanted, but it is enough to give me that bridge between the LANtastic network and our Mac network so we can essentially file transfer. That's what I am interested in. It's quick, it's dirty, it's right there, and it's fast."

CUE uses a 486 with both a standard Western Digital and AppleTalk interface card, running MACLAN Connect and LANtastic network software. Gibson explained that they tried putting Mac applications on this PC, but it was too slow. "It is definitely slower than having a Mac IIfx, but the kind of storage we do on it is long-term. Some things we only look up every three or four months. We can do that much more cheaply on a PC with a huge hard disk on it, than buying a Mac file server."

After installing MACLAN Connect to solve the primary problem of file sharing at CUE, Gibson slowly began to discover other ways to use MACLAN Connect that he had not foreseen. For instance, he said that "with my Mac, I can reach out to the accounting machine, which is a PC, and go right into their Excel file and open it from my Mac. I can mount their disk drive right on my Mac as if it is a shared resource on the Mac network. That's pretty exciting; to be able to go right into it without investing huge amounts of money in something far more sophisticated, like a Novell network and etherneting everything. I am aware of the fact that you can do that too. But that is a lot of time and money and sophistication to keeping that working."



HOW IT WORKS

The PC workstation running MACLAN Connect becomes just another node on a PC network. Through this single gateway workstation, Mac workgroups can access up to eight DOS network servers—plus stay in the standard Macintosh user interface. MACLAN's File Extension Mapping feature lets PC files appear with their standard desktop application icon. A simple double click opens both the application and the data file. For PC users, Macintosh files are listed with the normal DOS file names.

Robert Fields, national sales manager at Miramar, points out that as a gateway "there are no changes to make to the PC network, other than the fact you are adding one more workstation. There is no modification to the PC server and the PC users don't do anything different than they have been doing all along."

Fields explains that "when a Mac user goes into an AppleShare file server, they just select AppleShare in the chooser, and up comes a list of file servers available. We [the workstation running MACLAN Con-

nect] will appear on that list." Using MACLAN Connect, Macintosh and PC users can share printers, LAN volumes, CD-ROM drives, and other resources, regardless of their location on the network. Users can exchange data between PCs and Macs, and share hard disk storage and printers across the internetwork, all from their familiar PC or Mac user interface. MACLAN Connect can also act as a gateway for email applications that have compatible versions on both the PC and Mac, including CE Software QuickMail, Lotus cc:Mail, and Microsoft Mail.

Miramar's MACLAN Connect was designed with the recognition that the purpose and size of LANs differs between offices. The regular MACLAN Connect supports file transfer and email services for multiple Mac users, at the same time providing a gateway for Mac users to data on networked PCs. MACLAN Connect F/P adds resource sharing to these functions offered by MACLAN Connect.

MACLAN Connect for NetWare is the latest version. It offers all the functionality of MACLAN Connect F/P, while taking advantage of Novell's Application Programming Interfaces (APIs) to incorporate tighter integration with Novell's User, Group, and Printing utilities. With MACLAN Connect, ten Macintosh users and nineteen PC users can access a DOS server running a twenty-user version of NetWare without getting a one hundred-user NetWare license or NetWare for Macintosh—providing a significant cost savings.

For other business and workgroups, Miramar designed a less costly Lite version of both the basic Connect and Connect F/P products. Each Lite version provides the same functionality as the full versions, but is limited to support for one to four Mac users. There is also a twenty-user version for LANtastic peer-to-peer networks.

A SUCCESSFUL CONNECTION

Miramar recognized the need for products that would give both Macintosh and PC users equal access to network resources. The MACLAN Connect family of software gives Macintosh users flexible, low-cost options for sharing files resources across local area networks.

MACLAN Connect provided a network solution for both Richard Mednick at Graphic Camera Services and Hal Gibson at Computer Using Educators—two different businesses with different needs. As Mednick notes, with MACLAN Connect "we are utilizing two systems at the same time to achieve the final product. It's fabulous." ■

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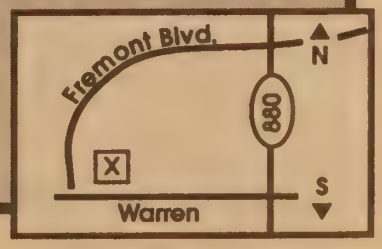


Send and Receive From Your Desktop

Fax Servers Offer Workgroups All Of The Benefits Of Individual Fax Modems, Without The Problems

BY PETER JOHN HARRISON

Time to fax a letter! First, of course, you have to sit down and write it... Done? Run over to the laser printer and put a sheet of letterhead in... Run back and print your document... Rats! Someone sent something to the printer, and it printed on your letterhead... Try again... Ah, good, it came out on letterhead this time, so run over to the fax machine, grab a cover sheet and fill it out... Sign the letter... Put the whole mess in the fax machine, dial, and press send! Don't forget to wait around to make sure the transmission goes OK. And, oh, yeah, you can throw the original away now (preferably in the recycle bin), you won't need it anymore.

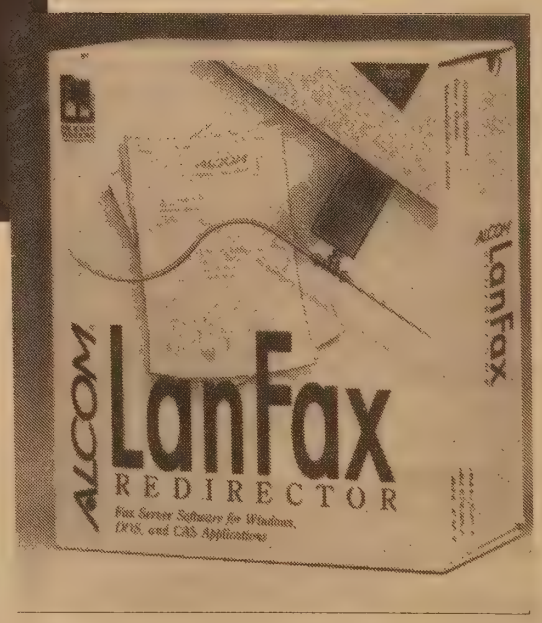
You might think the office fax machine is a time saver. Well, it is—faxing a letter cuts delivery time down from days to minutes; but, if you use a conventional fax machine, that time savings comes at the expense of the fax-run-around. Preparing and sending a fax takes several minutes for each fax, and those minutes add up to hours, days, and weeks of frustration and lost productivity.

There is a better way, one that will save not only the man-hours lost to the fax treadmill, but can also help you save on telecommunications costs by letting you send your fax transmissions when phone rates are lower, and will improve the quality of what you send.

"We used to have our engineers standing around our fax machine, waiting for their faxes to go", says James McGuffin, who manages the office systems for AT&T's Networking Systems group in Greensborough, North Carolina. McGuffin needed to find a way to cut down on the man-hours lost to the fax process, because "AT&T's largest expense is the wage we pay our engineers."

Inexpensive fax modems and software that allow PC and Mac users to send and receive faxes from their desktop have been available for some time and are an excellent choice for small offices where one person handles all the correspondence. Larger offices, like McGuffin's, need a more centralized approach that provides all fax users with a shared access point through which faxes can be both sent and received. Fax servers provide all the convenience and functionality of standalone fax modems and software, but eliminate problems that occur when someone is trying to send a fax to your business, but the target PC is turned off or doesn't have the fax software loaded. A central fax server also cuts down on the number of phone lines required, which can add up if you have several people in the office who send or receive faxes.

Large offices need a centralized approach that provides all fax users with a shared access point through which faxes can be both sent and received.



McGuffin's environment uses Alcom's LanFax Redirector 2.0 in a predominately send-only environment. "Our engineers can transmit from their desks, instead of waiting around for their faxes to go," but for most companies faxing is a two-way proposition. Network fax servers offer tools that make handling inbound as well as outbound faxes substantially easier than with traditional thermal fax machines.

Most office fax machines print incoming transmissions on thin, waxy, curly thermal printer paper. Images printed on thermal paper fade as they age, and the paper can go completely black if left on a car's dashboard, where the heat of the sun (or any other heat source) activates the thermal ink. Thermal fax paper is also expensive, between six and fifteen cents a page, and it can't be recycled, so used fax paper always winds up in our dumps.

"We used to have thermal fax machines" says Dave Ruth of Oakland, California-based Associated Lighting. "It was nice to start getting our faxes on plain paper." With over four hundred in- and outbound faxes each day, Associated Lighting's savings on fax paper alone justified the cost of setting up a fax server. Replacing the thermal fax machines also made for a more dependable way to receive faxes, Ruth explains. "Our customers never get a 'paper out' error" when sending a fax in.

A fax received by a fax server doesn't have to be printed at all. While a received fax can be automatically sent to a laser printer, it can also be routed to one or several recipients' desktop computers. Recipients can then read their fax before deciding to save it, delete it, forward it to someone else, print it, even incorporate it into another document and fax it to someone else.

For Associated Lighting's high-volume fax office, getting a fax server produced an immediate difference in how work got done around the office. "We had a real bottleneck at the fax machine", says Ruth. "Now we've digitized our customer service representatives' signatures...and all our logos and let-

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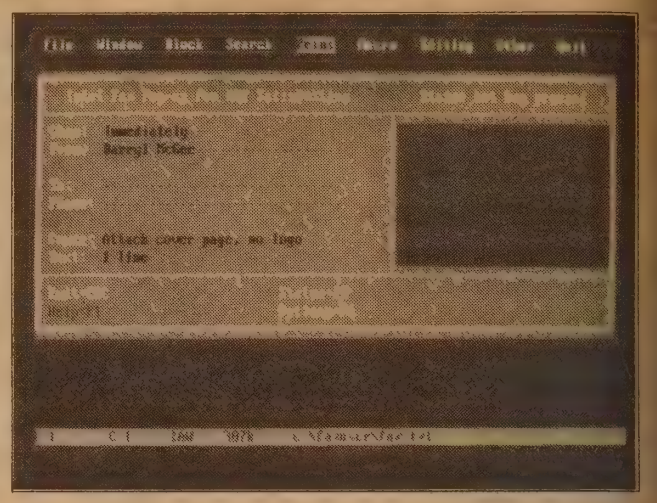

terhead" so they can be incorporated in outgoing faxes. A fax from Associated Lighting arrives looking like it was printed on letterhead, signed, and then faxed through a top-quality fax machine, but all this is done without pen or paper, using a word processing program and Intel's NET SatisFAXion software. "We wonder how we ever did it before", says Ruth.

If the fax server strategy has a weakness, it is how to deal with incoming faxes. Four workable strategies are currently available: Print all inbound faxes on a laser printer and deliver them throughout the office the way you would any ordinary fax, assign someone to read the cover sheet of each incoming fax and route it to the intended recipients' electronic fax mailbox, route faxes based on an "extension number" added to the main fax number, or provide each fax recipient with his own telephone number.

Each routing strategy has problems. Printing each fax and running them around by hand is labor intensive and has the fax clerk reading otherwise confidential documents. Routing each fax based on the cover page preserves a fax's confidentiality, but still requires some manual intervention. Servers that interpret DTMF (Dual Tone Modulation Frequency, popularly know as Touch Tone) information won't get the extension number if there aren't enough pause characters to allow the phone to connect before the extension sequence plays, and too many pauses can result in the server giving up and assuming the fax should be sent to the general delivery fax mailbox. Assigning separate phone numbers to each fax recipient (called direct inward dial or DID) is foolproof, but expensive, and requires special fax boards or add-on equipment to interpret DID codes received from the phone company, plus a monthly service fee for each phone number. Even future routing technologies, which may try to spot and interpret the recipient's name and route the fax appropriately, won't be able to read hand-scrawled cover sheets.

Currently, manually specifying the electronic destination of each fax seems to be the most cost effective. It provides significant savings over physically running each fax to its recipient or "slotting" it at the front desk, and parties sending inbound faxes don't have to experiment with the number of pauses to put ahead of an extension number. Manual routing is less expensive to set up than DID technologies, and there are no monthly fees for a tassel of separate phone numbers. The final blow to the two "automatic" routing techniques is that, sooner or later, faxes fall through the cracks and have to be routed manually, anyway.

Once the fax server has been set up, sending a fax is as easy to use as your familiar word processing program. Products such as Intel's NET SatisFAXion and Alcom's LanFax

Continued on page 94

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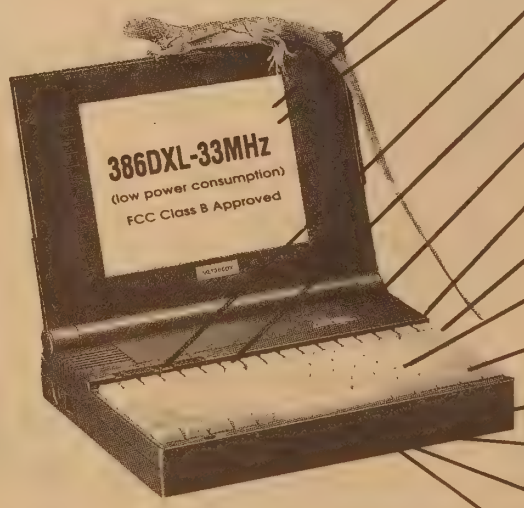

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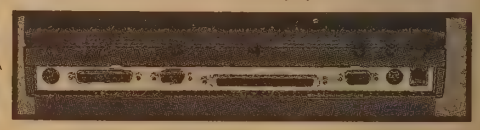

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Selecting Accounting Software

The Starting Point As You Begin In-Depth Research Into The Available Packages, Is To Evaluate What Your Business Needs

BY DAVID SIMON, CPA, AND JENNIFER ROBIN CHERNISS

My phone rings. "Excuse me, is this the CPA?"

"Yes it is," I answer.

"Mr. Simon, I saw your ad. We don't need to retain a regular CPA, we just spent $40,000 on a point-of-sale accounting system. It's very good software—it offers great graphics and the salesman highly recommended it."

"How can I help you?"

"My new bookkeeper needs some help getting it started. The old bookkeeper, who's been our accountant since the dawn of time but left to work for Amtrak and Hackney, isn't familiar with this stuff. We need a pretty routine setup—just the basics."

"How basic?"

"Oh, you know...chart of accounts, payroll, tax. Your typical financial statements and audit trails. It's a little bit of an emergency. I've been without any accounting for two months. Can you help my new bookkeeper?"

THE IMPORTANCE OF EVALUATING YOUR NEEDS

The person I was talking with probably knows how to run a business, but seems to have overlooked some fundamental factors in selecting accounting software. When you type "install A:\" your new software does not automatically design a complete accounting system. It's critical to invest the time evaluating your specific needs before making a purchase.

Accounting software isn't like other software—it requires laborious setup procedures and decision making, developing data, designing reports, and coordinating with the business activities of the entity. Some of the questions to consider include, how is this new system going to handle special allocations? What are your financial, managerial, and tax reporting requirements? What functional capabilities do you need? How are you going to integrate your new accounting system with the company's overall system of internal control? Can your accounting system handle your shipping and billing details? Is your inventory and staffing complex enough to even justify this type of accounting and point-of-sale system?

Copyright © 1992 by David Simon. All rights reserved.
David Simon, CPA, based in Oakland can be reached at (510)893-5753. Jennifer Robin Cherniss is a freelance writer living in Berkeley.

LOOKING AT WHAT'S THERE

Even the best accounting software packages have weaknesses. Developers are often forced to make trade-offs among mutually exclusive attributes. Some pricey, well-known systems are extremely difficult to work with or are just unstable, dumping the detail when you close the month or year. Overall, there are programs in almost every price range that seriously limit the user's ability to input descriptive information and carry it to the general ledger or have report writers that resemble the Internal Revenue Code in Greek.

People always ask me about the well-known, high-end, DOS accounting packages, such as AccPac, Solomon III, Macola, RealWorld, Open Systems, Great Plains, MAS 90, CYMA. The brand names command a premium. Typically they sell for $700 or $800 a module, so $4000 just for software is common. These packages have been on the market a long time and have attracted armies of third-party developers. While this assures a good supply of add-on features, it can inhibit some companies from letting their software evolve. The good news about these brands is that they are stable products with a track record. The bad news is many of these packages were developed when desktop hardware was more constrained. Some are more dated than others, but they all suffer to a degree. There are high-end DOS packages which are quite modern, but their developers are not so well established. The user must decide at which point to jump on this merry-go-round—to grab a modern, less familiar product, or a mature one that's past its heyday.

THE NEXT GENERATION

The leading high-end DOS accounting packages are not being kept up as they should. Instead, the developers are allocating their resources to develop software for the Windows environment and OS/2—not only because DOS itself is careening toward obsolescence, but especially to grab market share before their competitors do. In the next couple years there will be a new generation of graphically based accounting software, leaving the older DOS packages trailing behind.

The development time for Windows high-end accounting software is lengthy, and development costs are enormous. These factors will tend to concentrate the market and

In the next couple years there will be a new generation of graphically based accounting software, leaving the older DOS packages trailing behind.

RESOURCES:

Computers in Accounting
Warren, Gorham, Lamont, Inc.
1-800-950-1216.

discourage smaller companies from competing in the next generation of high-end accounting software. The Windows accounting products on the market thus far are mostly under $250. High-end applications should be reaching completion over the next couple years.

The inexpensive Windows packages seem far superior to comparably priced DOS packages. For one, they don't have to contend with the hardware limitations that older DOS software faced. The new Peachtree products have impressive graphical report writers—easy setup procedures for complex reports. MYOB, by Teleware, emphasizes ease of use over functionality. Computer Associates' Simply Accounting is well rounded, cleanly designed, and handles both inventory and simplified job costing. IBM Access to Platinum requires megabytes of RAM, but is designed for upgradability. Although Access to Platinum is touted as only an entry-level program, it has perhaps the most umph.

There is a growing body of literature on low-end accounting packages, including Windows software. A good, but fairly specialized source of information is *Computers in Accounting.*

MAKING A LIST, CHECKING IT TWICE

But before you begin in-depth research into available packages, the starting point is to develop checklists of what the business needs, i.e., a needs analysis.

At the broadest level, this includes deciding whether a multi-module, high-end system is required, or if a more simplified product will suffice, or even be preferable.

On a level of finer detail, a moderate-size business typically needs to address dozens of specific issues and capabilities. The list accompanying this article represents a rough and abstracted outline of general issues, for which particular capabilities should be considered. Beyond this, you should consider the availability of specialized applications, tailor made for your particular kind of business. For example, there are specialized billing programs for medical offices, architectural firms, and printing companies.

If you or your regular accountant lacks the capability to carry out a comprehensive needs analysis, there are a number of outside sources of help. Depending on the size of your company and the complexity of its accounting needs, these sources range from divisions of IBM and Big-6 accounting firms to consulting CPAs who can be engaged on an hourly basis. As with any professional service, try to obtain a referral from an appropriate source.

In the end, selecting accounting software is never easy. You slog through complex and ponderous issues, sometimes being distracted by a flood of ads, all along knowing that what you end up with will be history in four years anyway. In the meantime, at least you'll have the information you need from which to prepare your taxes. ■

General Issues To Consider When Selecting A New Accounting Software Package

Procedural needs:
- Your staffing availability and sophistication
- Physical flow of work
- Internal control policies and procedures
- Hardware (i.e. network or standalone)
- Accounting periods and methods

Reporting needs:
- Financial reports
- Budget analysis
- Managerial reports
- Specialized reports

Functional needs:
- Inventory
- Job costing
- Receivables and payables
- Sales analysis
- Transaction processing and allocations

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* Modem

SUN EXPO 92

PREVIEW

Sun Open Systems Expo July 20–22

Anaheim Convention Center

In addition to Sun's traditional markets, the fourth annual summer Sun Expo will feature options for "rightsizing"—the transition from proprietary mainframe and minicomputer systems to client-server based workstation environments.

Tutorials, technical sessions, and exhibits will feature Sun-based solutions in commercial markets—including support for high-performance desktop integration of information, graphics, and color, and multiuser/multitasking capabilities.

Cosponsored this year by the Sun User Group, the Expo also offers a good opportunity to find out more about SUG and other networking and support resources in the Sun/SPARC community.

For registration and other information, call 1-800-727-EXPO (3976).

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Instructor: Daniel Appleman of Heller, Ehrmann, White and McAuliffe

Introduction to C++
Instructor: Stephan Bechtolsheim, Integrated Computer Software, Inc.

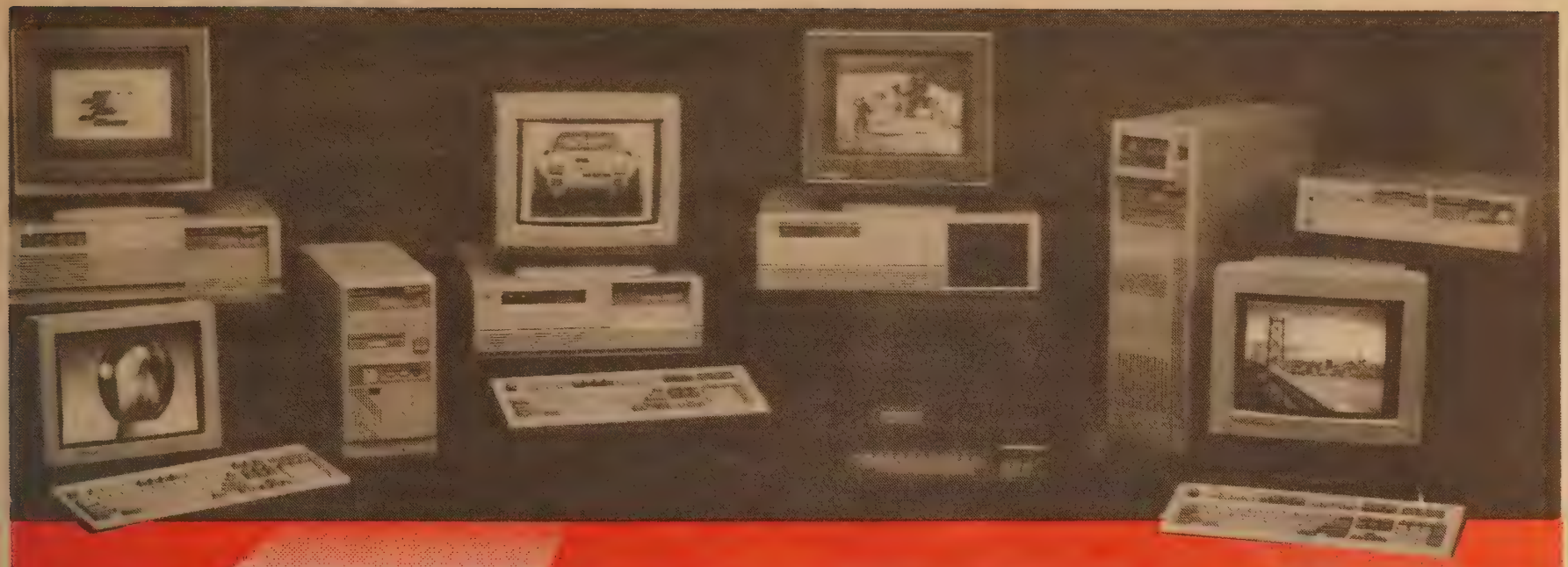
XT and Widgets: Building Applications in X
Instructor: Berry Kercheval, Protocol Engines, Inc.

Making NIS Work for You
Instructor: William LeFebvre, Northwestern University

An Introduction to UNIX System Administration
Instructor: Dinah McNutt, Tivoli Systems

Topics in System Administration
Instructors: Evi Nemeth, University of Colorado, and Robert Coggeshall, Cogwheel, Inc.

POSIX Programming
Instructor: Jeffrey S. Haemer, Canary Software, Inc.



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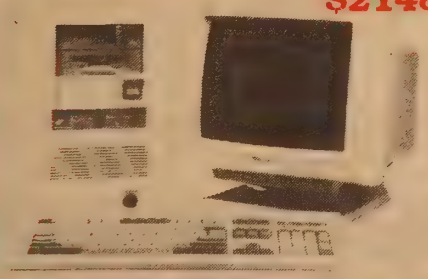

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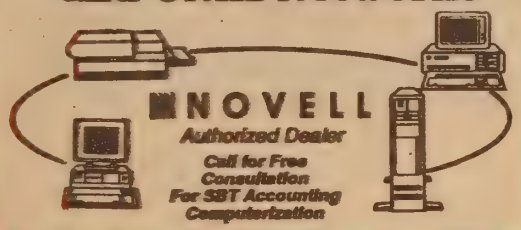

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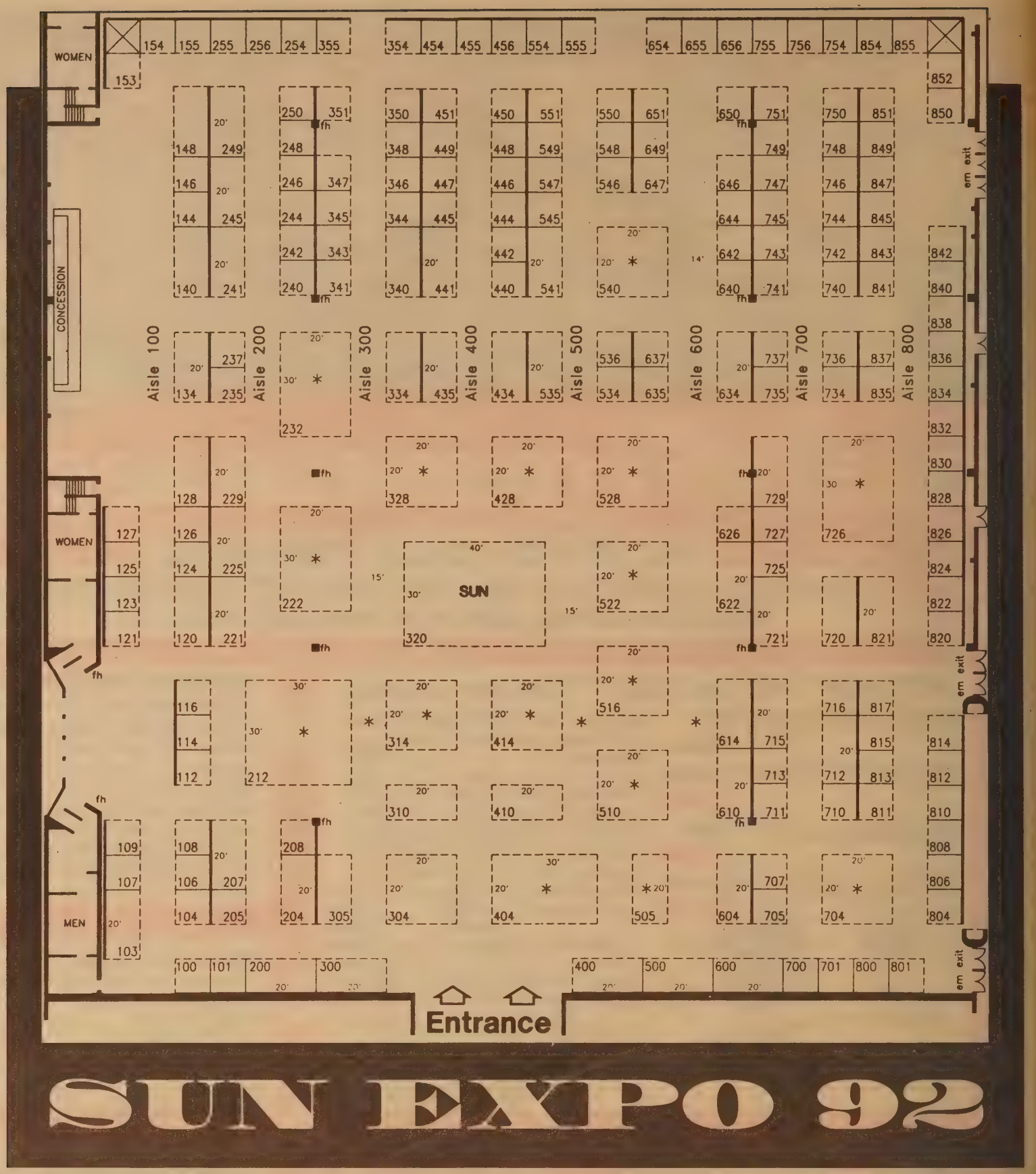

SUN EXPO 92

TECHNICAL SESSIONS
TUESDAY, JULY 21

9 am

- Extensible UNIX Debugging
- Don't Panic: An Engineering Tutorial on Porting Your Device Driver to Solaris
- FDDI: Building a Company-Wide Computing Environment
- Changing the Way Workstations Print
- Enterprise-Wide Data Protection

1 pm

- Virtual Partitions as a Disk Storage Tool
- Network Acceleration in Hardware
- Hierarchical File Servers
- Service Trends: Implications of Sun Strategy on Maintenance
- Backup Strategies

2 pm

- How and Why SCSI Is Better Than IPI for NFS
- What to Do With Your Internet Connection
- Monitoring & Analyzing Large Networks
- Bridging the Gap Between 2 and 3 Dimensions
- Network Data Management

4 pm

- Architectural Choices and Integration Frameworks in Object-Oriented Programming
- Network Management
- From ONC/RPC to TLI/RPC—Programming Standards

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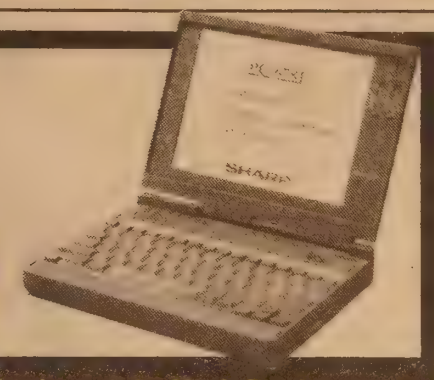

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SHARP PC-6700/120MB W/2MB	2758
SHARP PC-6700/120MB W/4MB	2828
SHARP PC-6700/120MB W/6MB	2878
SHARP PC-6700/120MB W/8MB	2948
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SHARP PC-6240/40MB W/2MB	858
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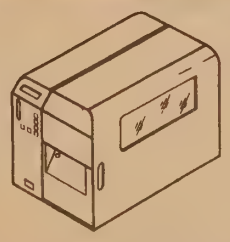

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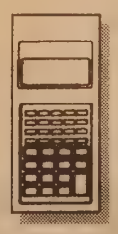

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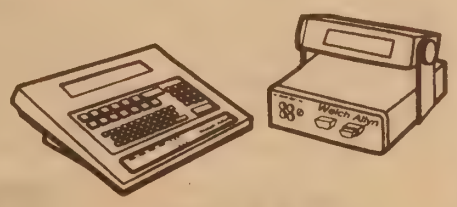

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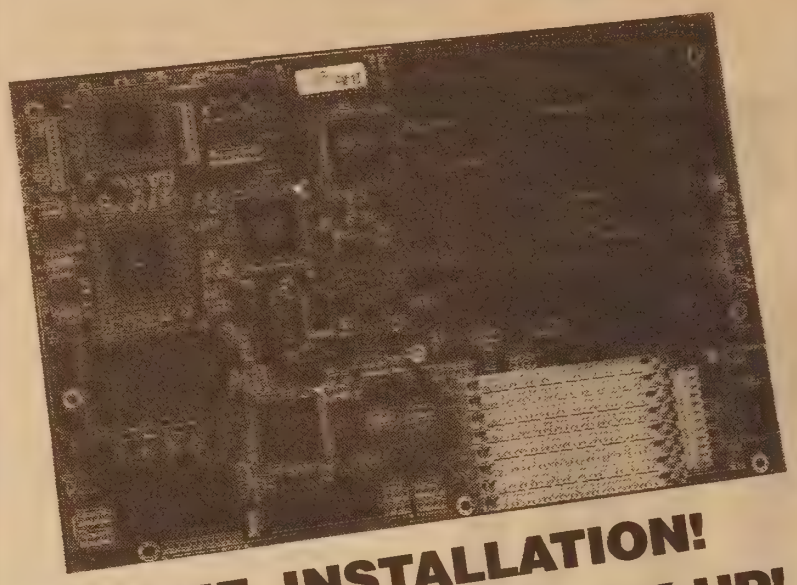

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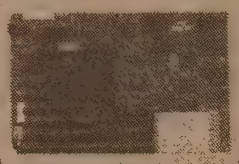

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486/50 ISA DX/DX2 2 Years Parts & Labor	Nice USA	64	1.2/1.44	130MB 15 ms	512K 16 Bit	1024x768 .28 dp	4MB	2S/1P/1G	IDE 2F/2D	Mini or Flat	101	Yes	Yes	$1859/ 1689
486/33 ISA 2 Years Parts & Labor	Nice USA	64	1.2/1.44	130MB 15 ms	512K 16 Bit	1024x768 .28 dp	4MB	2S/1P/1G	IDE 2F/2D	Mini or Flat	101	Yes	Yes	$1559
486/33 ISA 1Year Parts & Labor	ICS	64	1.2/1.44	105MB	512K 16 Bit	1024x768 .28 dp	1MB	2S/1P/1G	IDE 2F/2D	Mini or Flat	101	Yes	Yes	$1289
486SX-25 1 Year Parts & Labor	ICS	64	1.2	105MB	512K 16 Bit	1024x768 .39 dp	1MB	2S/1P/1G	IDE 2F/2D	Mini or Flat	101	Yes	Yes	$999
386/40 1 Year Parts & Labor	ICS	64	1.2	105MB	16 Bit	1024x768 .39 dp	1MB	2S/1P/1G	IDE 2F/2D	Mini or Flat	101	Yes	Yes	$929
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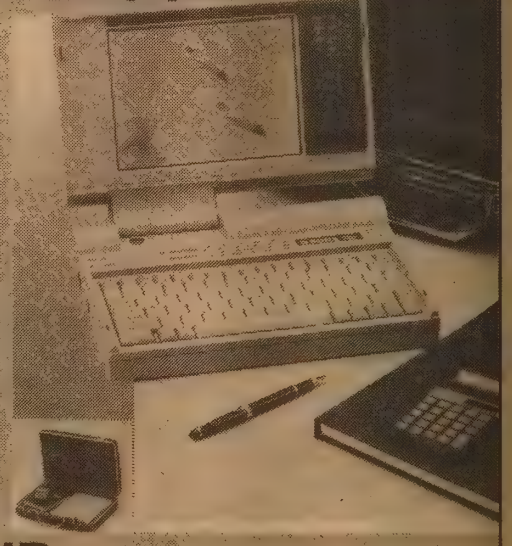

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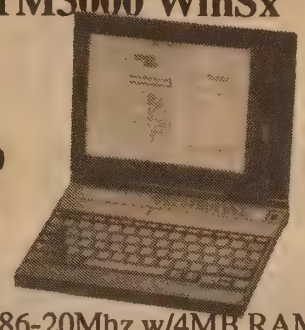

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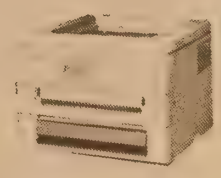

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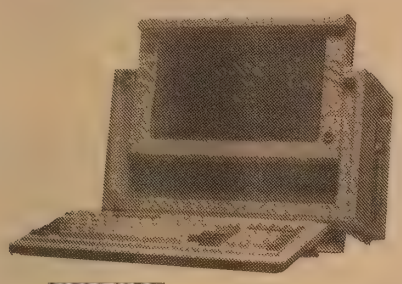

- 80386-33DX
- 1MB Exp. to 32MB
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- 1.2MB w/FHDC (1.44MB optional)
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- 2 Serial 1 Parallel
- 120MB Hard Disk
- One yearWarranty Parts & Labor

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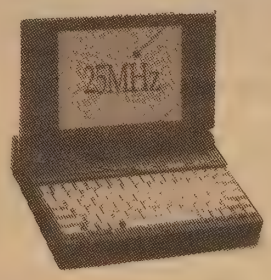
386-25SXL Notebook



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- 120MB Hard Disk (17ms)
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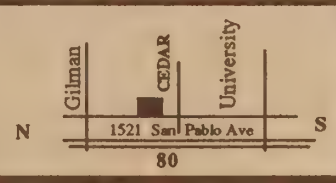

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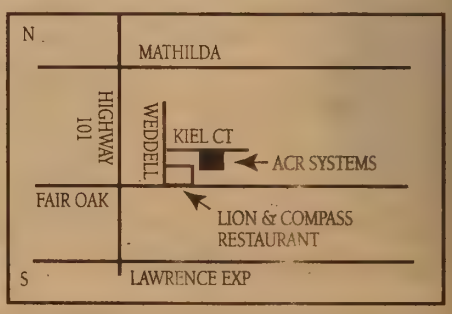

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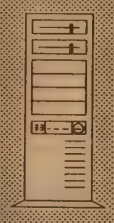

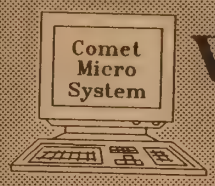

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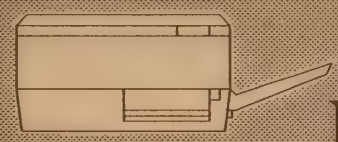

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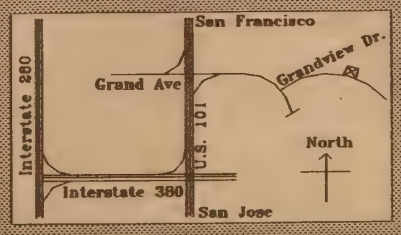

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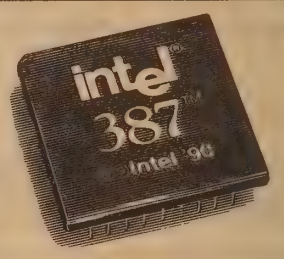

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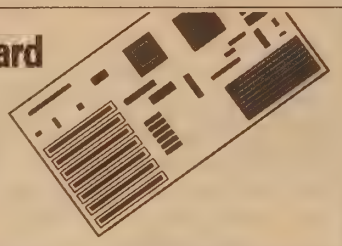

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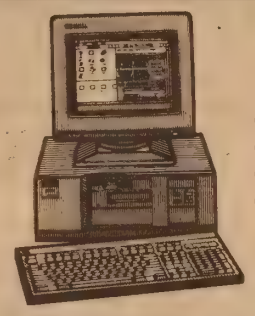

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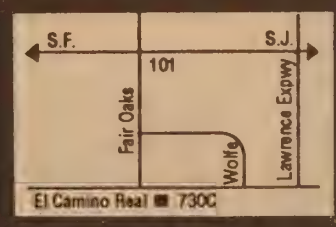

MICRO MARKETPLACE

MICRO MARKETPLACE

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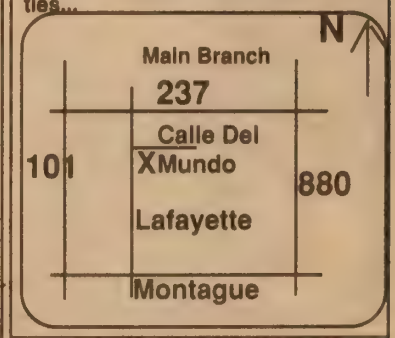

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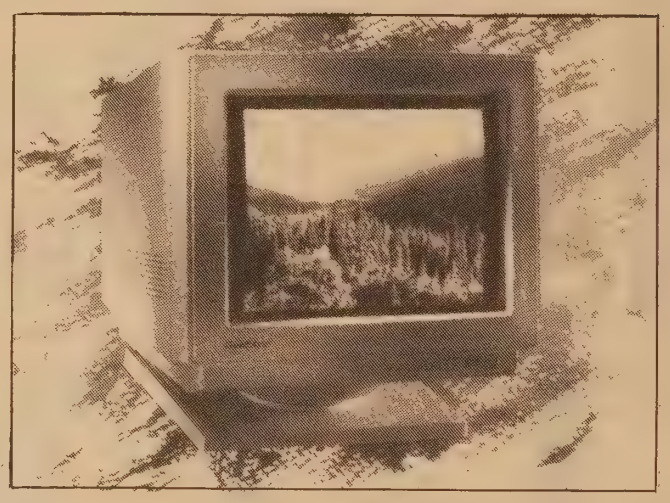

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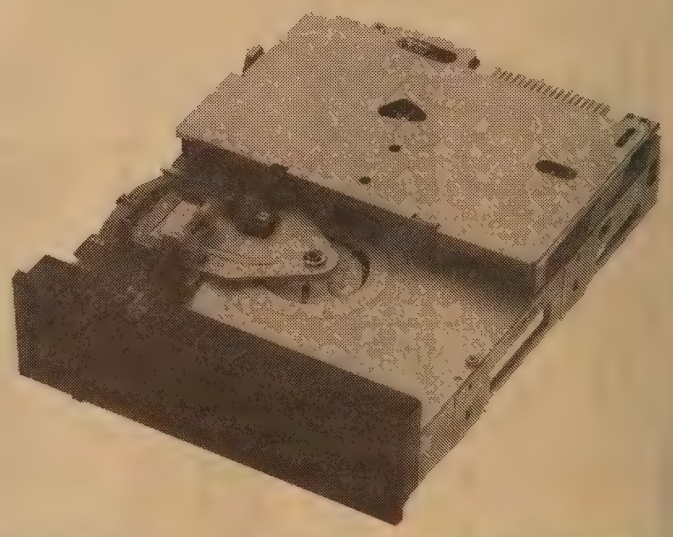

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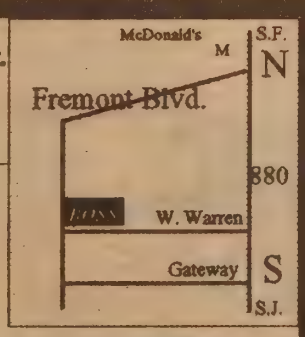

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- Socket for 80387
- Tower or desktop case w/power supply
- 101 Enhanced Keyboard
- Supports MS-DOS, OS/2, Unix, Xenix

$355

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- 1:1 Interleave HD/FD Controller
- Socket for 80387
- Tower or desktop case w/power supply
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- Supports MS-DOS, OS/2, Unix, Xenix

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Maxiswitch 101 Key	45
OmniKey 101/102/Ultra	73/73/102

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Panasonic KX-P 1624 w/Cable	345
Panasonic 1124i w/Cable	280

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286 8/20 MHz	85
386-SX 16 MHz	120
386-SX 25 MHz	140
386-25 MHz	180
386-33 MHz 64K Cache	210
386-40 MHz 64K Cache	225
486SX-20 MHz	275
486-33 MHz w/64K Cache	500
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387-25/33	135/150
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230W Power Supply	48
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Logitech Mouse Man	60
Logi Trackman Serial/Bus	70/75
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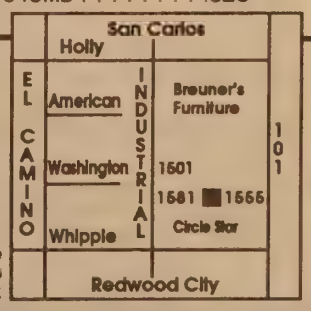

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486DX2-50/64C ISA	696	856	1256	1306	1376	1426	1626
486DX-33 ISA	459	619	1019	1069	1139	1189	1389
486DX-33/64C ISA	465	625	1025	1075	1145	1195	1395
486SX-20 ISA	250	410	810	860	930	980	1180
386DX-40/64C ISA	208	368	768	818	888	938	1138
386DX-33/64C ISA	204	364	764	814	884	934	1134
386DX-25/64C ISA	200	360	760	810	880	930	1130
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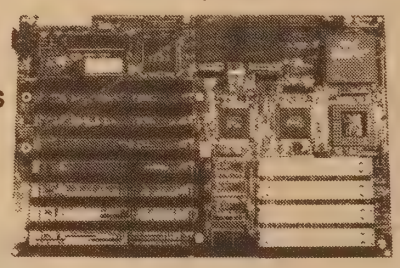

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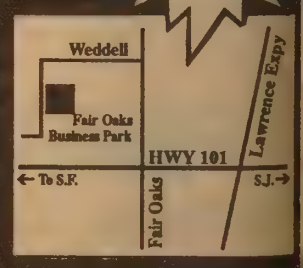

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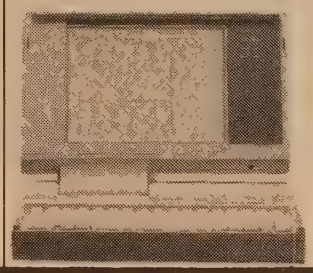

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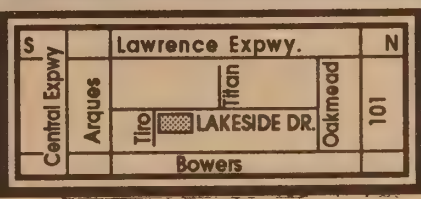

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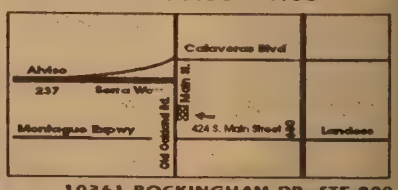

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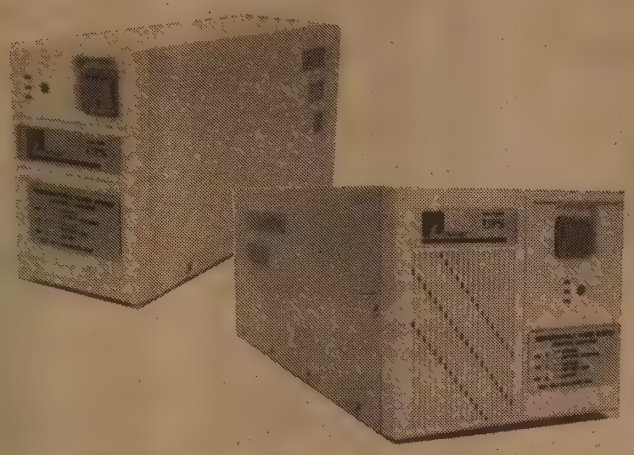

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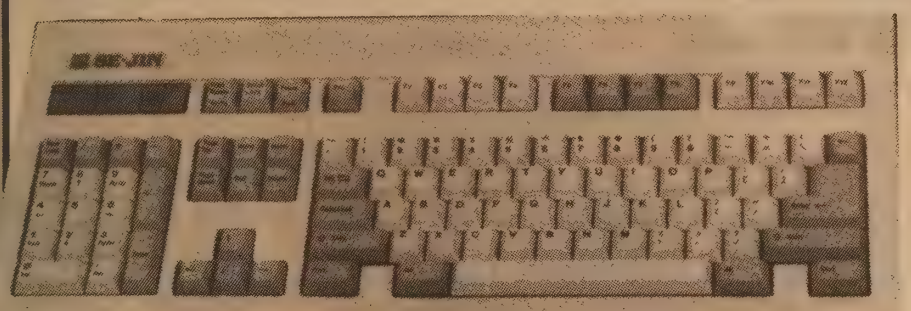

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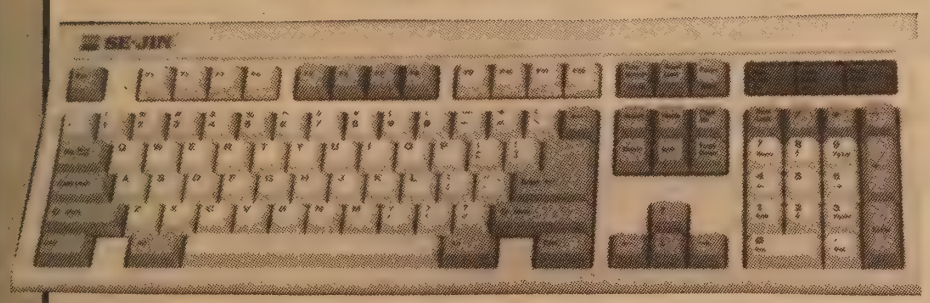

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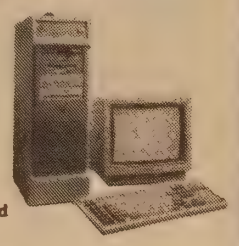

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*8MB DRAM 70ns (up to 64MB)
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32,768 Hi-Color RAMDAC
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486DX-33/50DX2 MHz ISA
64KB Cache 120MB HD

*Intel 486DX-33/50DX2 MHz
*64KB WriteBack Cache
(up to 256 KB)
*4MB DRAM 70ns (up to 32MB)
*120MB 15ms IDE Hard Drive
*SAMSUNG SyncMaster 3 1024x768
0.28dp SVGA monitor
*Trident 8900C 1024x768 w/1MB
SVGA Graphic Card
*TEAC 1.2MB Floppy Drive
*SONY 1.44MB Floppy Drive
*101 Enhanced Keyboard
*Logitech 3-Buttom Mouse w/ Pad
*2HD/2FD IDE Controller w/ 2 Serials, 1 Parallel, & 1 Game Ports
*Tower Case w/230 Watts Power Supply
*Microsoft DOS 5.0 Package

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32-Bit Local Bus Graphic

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32-Bit Local Bus Slot
w/ 1MB & Hi-Color
* TEAC 1.2MB Floppy Drive
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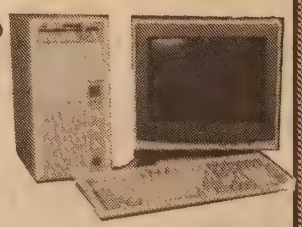
* KeyTronic 101+ Enhanced Keyboard
* Logitech 3-Button Mouse w/ Pad
* 2 HD/2 FD IDE Controller
* 2 Serials, 1 Parallel, & 1 Game Ports
* Tower Case w/ 230 Watts Power Supply
* Microsoft DOS 5.0 Package

Complete Sys. $1849/$1999
(486DX-50 add $240) (Monitor not included)

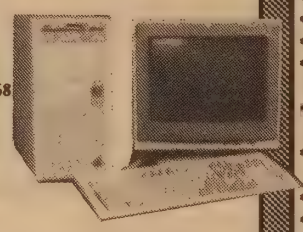
386DX-25 MHz
SVGA 80MB HD



*386DX-25 MHz
*2MB DRAM 70ns (up to 8MB)
*80MB 16ms IDE Hard Drive
*Super VGA 1024x768 0.28dp
Color Monitor
*Trident 9000 1024x768
SVGA Graphic Card w/512KB
*5.25" 1.2MB Floppy Drive
*3.5" 1.44MB Floppy Drive
*101 Enhanced Keyboard
*Microsoft Compatible Mouse
*2HD/2FD IDE Controller w/ 2 Serials, 1 Parallel, & 1 Game Ports
*Mini Tower Case w/ 230 Watts Power Supply

Complete System $ 999

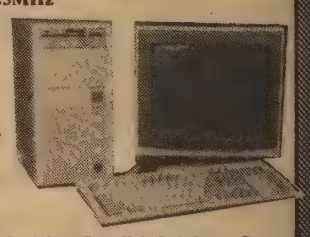
386DX-33/40 MHz ISA
64KB Cache 105MB HD



*386DX-33/386DX-40
*64KB WriteBack Cache
(up to 256KB)
*4MB DRAM 70ns (up to 32MB)
*105MB 15ms IDE Hard Drive
*SAMSUNG SyncMaster 3 1024x768
0.28dp SVGA Monitor
*Trident 8900C 1024x768 w/1MB
SVGA Graphic Card
*TEAC 1.2MB Floppy Drive
*SONY 1.44MB Floppy Drive
*101 Enhanced Keyboard
*Microsoft Compatible Mouse w/ Pad
*2HD/2FD IDE Controller w/ 2 Serials, 1 Parallel, & 1 Game
*Mini Tower Case w/ 230 Watts Power Supply
*Microsoft DOS 5.0 Package

Complete Sys. $ 1249/1279

386SX-16/25MHz
SVGA 40MB HD



*Intel 386SX-16/AMD 386SX-25MHz
*1MB DRAM (up to 16MB)
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Color Monitor
*Trident 9000 1024x768
SVGA Graphic Card w/512KB
*1.2MB Floppy Drive
or 1.44MB Floppy Drive
*101 Enhanced Keyboard
*Microsoft Compatible Mouse
*2HD/2FD IDE Controller w/ 2 Serials, 1 Parallel, & 1 Game Ports
*Mini Tower Case w/ 230 Watts Power Supply

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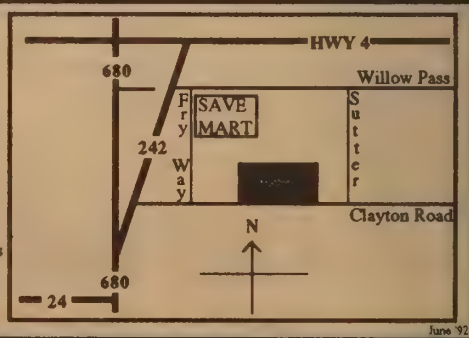

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MICRO MARKETPLACE

Continued from page 58

Redirector are activated by selecting a different printer through your computer (i.e. print the document to "LPT3:" or "Laser Fax" instead of your standard printer). A TSR program intercepts the print file, asks for the name and phone number of the recipient (or you can select one or more destinations from a "phone book"), and what time you'd like the document sent (so you can take advantage of the cheaper evening, night, and morning phone rates). Once this information has been entered, the TSR directs the "printout" to the fax server for transmission. When an inbound fax is routed to you, the same TSR alert beeps or flashes a flag on your screen—you can then run a separate program to review your fax "in" box.

While fax servers are very easy to use, installing one requires careful planning, a solid understanding of LAN administration basics, and plenty of patience. You'll also need an AT-compatible '286 or '386, with between 1MB and 2.5MB of RAM, a large (80MB or more) hard drive, a network interface card, and at least one fax card (which must be compatible with your fax server software). Once you have all the pieces, I'd recommend setting a couple of days aside for the process of installing and testing the fax server. It's possible to do, but missing one little detail can seriously confuse the installation, and you'll probably need to call your software vendor's support line to figure it all out.

The installation hassles are worth it. Faxing through a fax server is quick and convenient, and copies printed at the receiving end look almost as good as copies printed locally on a laser printer. Even line drawings and photographs processed through a scanner come out crystal clear, and images received by a fax server can be manipulated and redrawn using a paint program, incorporated into another fax, or passed to an optical character recognition (OCR) program and imported as text into your favorite word processing package. Faxing the older way doesn't offer half the options available from desktop faxing.

With over four hundred in- and outbound faxes each day, Associated Lighting's savings on fax paper alone justified the cost of setting up a fax server.

I'll never jump up and down or be moved to tears by the quality of a fax, but finding ways to save time and still make a good impression is vital in today's business environment. Desktop fax software and servers provide tools that help you look good—and that could mean making a critical first impression that forms the beginning of a lasting business relationship. ■

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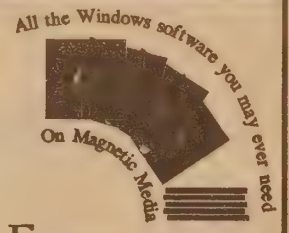

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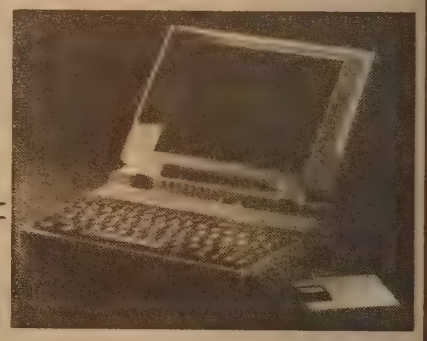

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IDE 210 MB	2160	1730	1535	1375
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SCSI 340 MB	3170	2680	2485	2325
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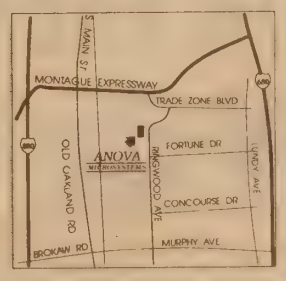


Silicon Graphics Paints The World

SGI President Ed McCracken On The Computer Of The '90s

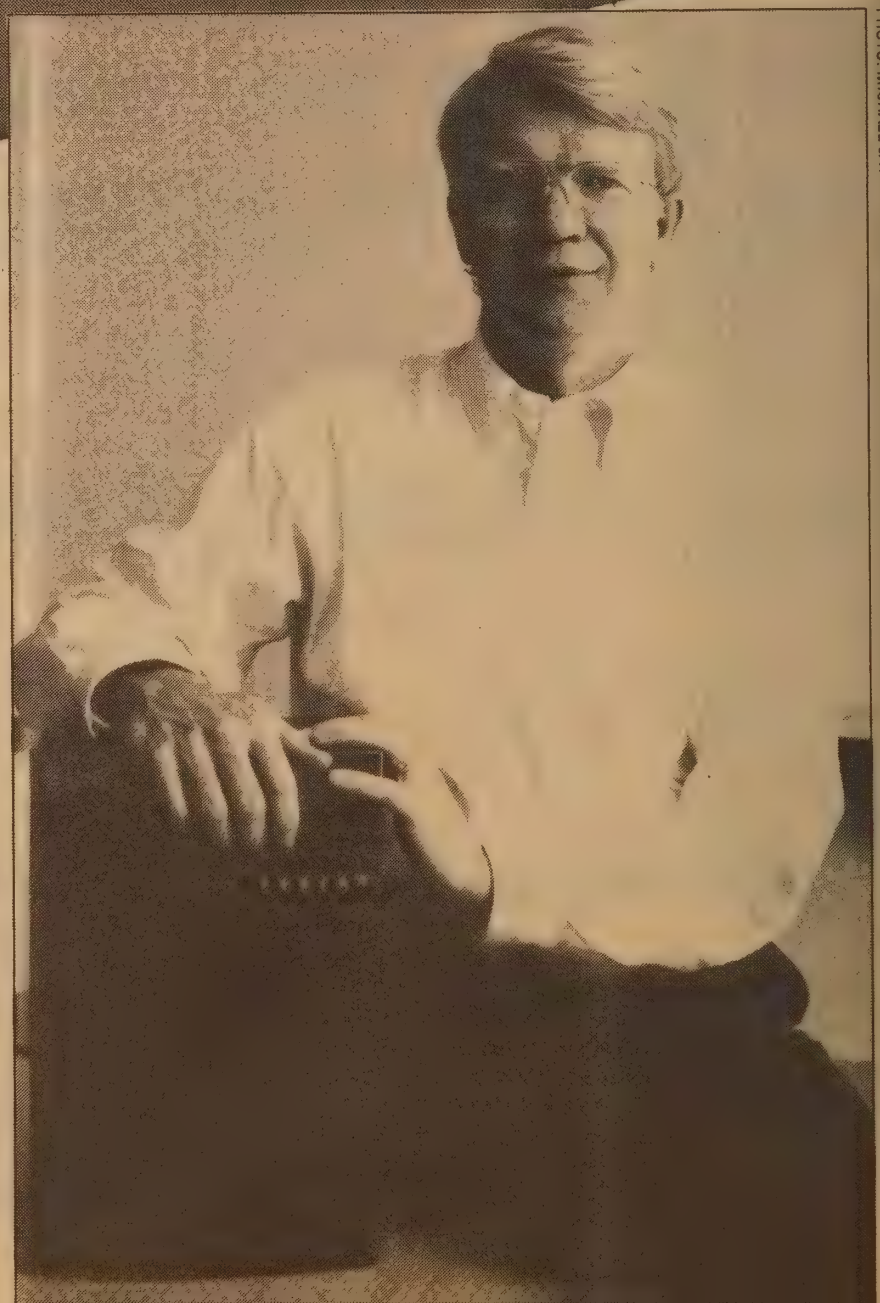


PHOTO: MICHAEL JAY

BY MARY EISENHART

"We do all our production on Macs..." I say, by way of prefacing a convoluted question.

"Most people do. You don't have to apologize," laughs Ed McCracken.

McCracken, president and CEO of Silicon Graphics, has a lot to be cheerful about these days. When we first visited the company in 1989, few people in the personal computer world had encountered SGI's Iris workstations, unless they happened to work in one of its niche markets. Molecular modeling, say. Flight simulation. Virtual reality. Film animation.

These days, obscurity is not SGI's problem. Its technology turns up in some highly visible places—computer videos at recent Grateful Dead shows, for instance, in which the musicians' three-dimensional faces floated in space and morphed into each other. All over ESPN during the America's Cup races, using a satellite-based graphics system called SailTrack to deliver two- and three-dimensional graphics explaining sailboat positions, replaying key maneuvers, and providing ongoing highlights of the competition.

If McCracken has his way, Silicon Graphics machines, especially the affordable Iris Indigo, will be turning up in some other interesting places too—the desktops of current Mac and PC users. On the PC side, SGI, as part of the ACE consortium, will soon be offering Windows NT as an operating environment. On the Mac side, SGI has recently licensed Apple's QuickTime technology, and vendors including Quorum are offering products that allow Mac software to run on Irises—often performing much better than it does in its native environment.

SGI is currently in the final stages of acquiring MIPS Computer Systems, which designs the RISC chips used in Iris workstations and a host of others, including systems sold by MIPS itself, and will soon be moving MIPS employees onto its ever-growing campus in Mountain View.

Last time we did this [issue #54], it was a matter of explaining to a PC-using audience who you were and why it was worth paying attention to what you were doing. Now we don't have that problem so much.

That's good to hear.

There's a lot of stuff to catch up on. But before we get to the industry stuff—how did SGI get involved with the America's Cup? And what's this press release about joining forces with the Cousteau Society? Those things are a little out of the ordinary for your basic hardware vendor, and they sound like fun.

They are fun, and I think both of them are indicative of the kind of company we are.

On the America's Cup, we had two employees who just got interested on their own, playing around with this kind of thing. They happened to enjoy sailing, and just wanted to be involved, so they decided to do it. We supported them—after we found out about it. *[laughs]*

It was one of these under-the-table projects. They went down to San Diego and spent a couple of months in a van doing all the programming, making it all work. And what you saw on TV is what came out of it. It was just great. They're happy and we're happy and they enjoyed the time, and they helped the company out.

They're not quite sure what they're going to do next, but I'm sure they'll figure something out. *[laughs]*

And the Cousteau Society thing is somewhat the same way. We have an environmental program in our company.

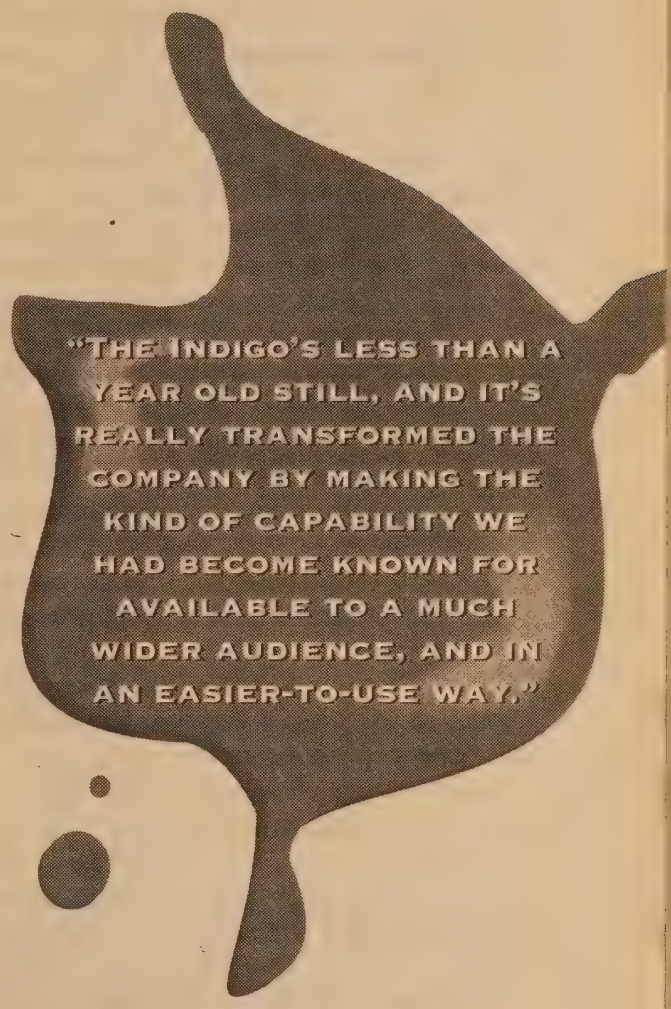
The way that started was that an employee came to me almost three years ago now, and said, "You know, the Silicon Graphics technical workstations are used in a wide range of applications, including military applications. Well, I think because of the military uses I want to leave the company and go do something else."

We talked a while, and I said, "Instead of leaving the company, why don't you stay and help us change the mix of our business toward other marketplaces?"

He decided to do that, and stayed a couple of years, and then another person took over. They developed this program called S.A.V.E., Scientific Analysis and Visualization of the Environment, and Jacques Cousteau got involved at one time. So a lot more of our business today goes to environmental scientists. We've developed a demonstration center here, we've provided equipment resources for it, we put some people in it, and they're developing the environmental sciences marketplace. It's been a real success story for us. So that's where that came from.

It's just part of the style here that people get involved in things. Our people are real active people, and one of the things we really believe in here is trying to create an environment where people can trust their personal interests and their own common sense, and they can bring that to the job and be passionate about it. That means that our people are going to get involved in some really fun, off-the-wall things, and that's fine.

The kind of people we sell to, primarily, are innovators. They're people who are willing to consider something other than the standard commodity product. You want a standard commodity product, buy it from



somebody else. That's not who our customers are. Our customers are people that want to do something different, that want to do things better, that have some competence and passion about doing it.

Certainly seems to work.

Yeah, it has worked. Our company has been really successful since the last time we talked. It's been many years, but our momentum is very, very good.

Probably the most exciting thing that's happened in the last year is the Indigo, of course. It's less than a year old still, and it's been a product that's really transformed the company by making the kind of capability we had become known for available to a much wider audience, and in an easier-to-use way, with some digital media added. It's been a real success story, and I think our unit volume has increased by something like a factor of three since it's been introduced.

Can you tell who's buying them, in contrast to your traditional markets?

Well, certainly the biggest market for Indigos are the same companies, the same institutions, the same organizations that were buying our other stuff, but as the visual applications have become available, they wanted to move from two or three systems to fifty or a hundred. Those have been the biggest customers.

Beyond that, though, we're selling quite a few systems over our telesales network in the US. About nine months ago we put in a telesales group here, and about 10% of our US sales now are going over the telephone. Which is pretty dramatic in nine months.

To say nothing of pretty uncommon for a workstation company.

I think so. A lot of that business, I think, comes from a company that's familiar with Silicon Graphics, and just finds that that's the easiest way to order.

So you'd say that a lot of the people who use that channel are repeat customers.

A lot of them are, but there's a lot of new customers also. It's a combination. As time goes on it's going to move over into new customers a lot more, but we're able to develop our databases and our approaches and style and so on with a lot of our current customers as well.

What we're trying to do is increase customer satisfaction with our current customers, by providing an easier channel to get stuff. But at the same time we can beef up our total marketing to find new customers.

We're selling a few of the Indigos to professionals out there in small offices—architects, other types of people—but we're also selling a few of them into the digital media world, just as digital media devices.

As you know, in the digital media world, our objective was not to do that as much as it was to make those capabilities available to everyone, and to have them become standard features of all workstations. But in the process, if we sell a few systems to people that are just concerned about video and sound, that's fine too.

It seems that as you expand in these new markets, you get into a lot of cross-licensing, QuickTime being one of the most recent agreements. This is a new world for you—where does that fit into your plans for the future?

It is a new world for us. And we are certainly the technology leader in that field. But it's a chaotic world right now, and the more we can work with others to set standards, the better off we are. And of course Apple is a standard-setter in that environment, and if both companies can be working with common video formats and ways of doing things, it's great.

Apple seemed to be enthusiastic about it, and we're enthusiastic about it, and it just seemed like a way we could work together without getting in each other's way a lot either. It's not that we have this intense deep relationship with Apple—we don't. But we're able to share a common view of a certain few things, and it'll work out great.

Even more important from our standpoint—a lot of our customers are growing up from Macintoshes. And that's good.

What do you mean, growing up?

There's a lot of different things. The Macintosh was the computer of the '80s, and the more innovative kind of customer bought into the Macintosh idea pretty quickly. I know I did—I've been using Macintoshes for ten years—and I'm sure you did as well. We spent ten years using a Macintosh; the ten years before that I spent using minicomputers.

A considerable paradigm shift.

Very, but it was wonderful. And the next ten years I'm going to be using Iris workstations.

That paradigm shift may not be quite as much, but certainly a paradigm shift away from flat images and lots of text, which is what the Macintosh is all about, to our kind of visual computing, with moving color images, three-dimensional objects, and great sound and video, is, I think, as significant a paradigm shift as the shift that we went through from minicomputers and time sharing systems to Macintoshes.

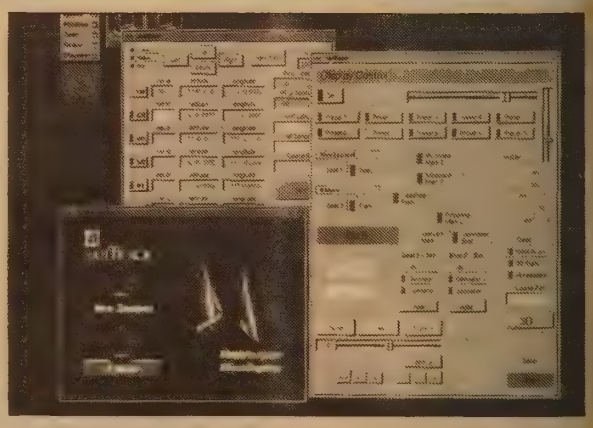
That's part of the growing up process, I think.

In addition to that, I think a lot of the real power Mac users, and power PC users as well, have big ideas about what they can do with their systems, and their systems just can't deliver it today.

One of my beliefs is that there's a tremendous acceleration in what we can provide at a certain price in terms of compute performance. In the 1980s, you could make a ten-times difference in what a computer could do at a given price about every seven years. And now you can do it every three and a half years.

And I've felt that when you can make a hundred times difference in what a computer can do—two of those ten-times changes—then the fundamental paradigm shift has to happen. If you think about it, the Macintosh paradigm was put together in 1982, and since then we've made a hundred-times change in what hardware can do at that price, and we're ready for new paradigms. It'll be interesting to see if the new paradigm will come out of our UNIX environment or whether you can provide enough power to the Macintosh to move into the new paradigms as well.

But those applications packages that were written between 1982 and 1986 are at the end of their life, and



Using a satellite-based tracking system called SailTrack, Silicon Graphics workstations provided new perspectives on the America's Cup races.

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those are the packages that most of us have used on Macintoshes. Anybody that's writing applications software today, I think, is absolutely brain dead if they write application software that does not assume the standard presence of sound and the presence of color moving images.

You have to assume that when you write application software today, or your software's obsolete the minute you write it. Because all of the new PCs and Macintoshes and Irises and other things, by the mid-1990s, are going to have all those capabilities standard.

Do you think individual, relatively low-end users will be using parallel processing anytime soon?

Yeah. But I don't think you should have to care about it.

The software should just know it's there...

It should just know it's there and deal with it. I think it just fits into this ten-times difference every three and a half years.

So do I think you're going to use a computer that's ten times more powerful than what you use today in three and a half years? Absolutely, because it's going to be there, and it's going to be the right price, and it's ten times more powerful, and it's going to let you do a lot of neat new stuff. So yeah, you'll use it.

If it happens to be a parallel processor, that's great, but you won't have to know about that. There's no reason to expose that to a user.

It's the application developer who has to worry about it.

Right, and we've had lots of experience here at Silicon Graphics with our high-end systems, with symmetric multiprocessing in the operating systems area and the compiler area to make sure people can write applications that the user doesn't have to worry about.

The easiest way is to take one application and put it on one processor and another application and put it on another processor, but you don't have to be that simplistic even. You can provide a lot more power than that in parallel processing in the way we do it—even within an application, spreading it across the processors.

But that's our job. That's the system's job. It's not the user's job to do.

I don't see any stop to at least being able to speed computers up by a factor of ten every three and a half years. You can kind of visualize four or five of those jumps, and four or five of those jumps is ten to the fourth, ten to the fifth...

It's taking you into something you can't even visualize, really.

Well, but that's the point. A lot of that power's going to be used up in visualizing, because when you switch to visualizing images and trying to deal with people as they are in real life, you use lots of power. That's where it gets used.

Moving out from that a little, there's a lot of talk from the phone companies and the cable companies about supplying all kinds of digital information to the home. Do you see your technology playing a part in that?

We're very much believers that over a five- to eight-year period of time, the kind of technology we use today in the office will move into the home.

[SGI chairman] Jim Clark will be talking about the telecomputer at SIGGRAPH this year. He'll be talking about the functionality that will be needed on both ends of the fiber into the home. We believe that you'll need the kinds of graphics capability that we have today, and we believe that you'll the kind of audio and video capability, as well as the ability to handle the TV kind of signals that everybody else is talking about.

So there's no question that the technology we're dealing with today, with the power user, is going to flow into the home over a five- to eight-year period of time. And fiber optics into the home will be one of the enabling technologies.

Of course that involves the absolute integration of image processing, computer graphics, great digital sound, and video. The absolute integration of all that into a common operating platform.

We're really believers that all that gets tied together in an easy-to-use fashion, so that the average user can operate on video, sound, graphics kinds of things, easily and conveniently, much like you operate on a spreadsheet or text today.

Do you think things like the Photo CD, essentially enabling people to go to K-Mart and get their photos back on CD-ROMs, will have much impact on your business?

Absolutely. I think the ability to go out and take a bunch of pictures and hook them up to your computer and bring them up onto the screen in a window—enhance the images, and string them together with sound, lay them into a video, perhaps, of multiple images strung together, or even to use them as a texture map on a three-dimensional object—is all just normal stuff. It's normal stuff.

When you talk about these kinds of things, it starts to sound like blue sky. But around here it isn't, because we're dealing with the kinds of users out there that are willing to pay, at the present time, $10–30,000 to do these kinds of things. So we're doing real things with real customers today; but in the meantime we're learning the necessary disciplines, so that we're moving down the learning curve so we can start to provide these capabilities on $5,000 systems, or less, in a way that these capabilities are accessible to real people.

What's the deal with ACE and NT and MIPS?

That's a complex question!

It's a very complex question. Feel free to break it down into smaller chunks!

First let me talk about MIPS and the merger. First of all, we're doing this interview in late May. At the present time we've just put the merger proxy out on the street, people take a vote on it, and that's it. It's full of every possible negative thing about the merger you could imagine so we could be legally safe.

So please don't read it! *[laughs]*

That's got to be out for a month, and then we'll take a vote in late June. We hope to have the merger complete by the end of June, and start our new fiscal

Since its arrival last year, the Iris Indigo has been turning up in traditional Mac and PC markets.

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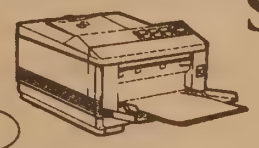

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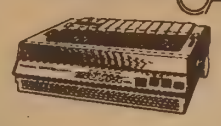

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year in July as a new company.

There are some people who say you're paying way too much for MIPS. Obviously you don't agree.

No, I don't. I don't agree. But those people tend to be either the people that read the press, or they tend to be the people that view MIPS as a business.

And we don't. We view them as a technology. This strategic technology asset—of being five or six or seven years down the learning curve in terms of RISC microprocessor development, with tremendous support from the world's most advanced semiconductor fabrication facilities, primarily at NEC and Toshiba, but six different companies—is just a tremendous asset. That's worth a lot to us, and we think it's a fair price.

We're adding this fourth strategic asset to our company. The technology strategic assets we have are visual computing, digital media, symmetric multiprocessing, and now, RISC CPU development itself. So it's this fourth strategic asset that we're buying with this merger.

It's really important to the computer industry in the '90s. It's how we get this order-of-magnitude change over three and a half years, through really intense development of new microprocessors. We think it's central to our activity, and we're very, very excited about it.

July first is when we really get going as a merged company, and we're spending a lot of time now going through the organization, and trying to figure out who works for who and how it all works. The key to all that is that we'll be setting up a microprocessor design and marketing organization called MIPS Technologies, that will be a separate unit of our company. This organization will have the responsibility for designing competitive microprocessors.

We'll be beefing that organization up, adding more financial strength, more funding to do more designs, to stay at the leading edge of the marketplace.

A more difficult part of the merger is merging the MIPS systems business into the Silicon Graphics systems business, because obviously over time it doesn't make sense to have two different systems product lines. So we'll be working together with the MIPS people to merge that into one product line as time goes on. In the meantime we're continuing to produce the MIPS systems for MIPS customers, and we'll be supporting them for years, as you'd expect.

The real change in Silicon Graphics is the addition of this new strategic technology asset of microprocessor development, where we're entering not at the beginning of the learning curve, but five or six years down the learning curve.

Not long ago I was talking to Stan Shih from Acer, who was talking about their parallel processor machines that use MIPS chips. Where does all this leave the relationship with all of MIPS's other chip customers?

The first thing to understand there is that Silicon Graphics, as well as other MIPS customers like Acer, don't buy their chips from MIPS. They buy them from NEC or Toshiba or IDT or LSI Logic or Performance Semiconductors. So neither Silicon Graphics or MIPS are in the semiconductor business, in terms of selling chips.

We don't do our own fab, but we also don't do our own chip marketing. We just license the chips to NEC, and they go out and sell them. So an Acer buys the chips from NEC or Toshiba or somebody.

That's one point. The other point is that in the design of these microprocessors, it's very important that we take into account design ideas from the other systems companies. I think there's somewhere like ninety different systems companies that are using the MIPS architecture, probably more than any other RISC architecture in the world. Probably more than any other architecture except for Intel. So it's very important that we take those design ideas into account.

Just to make our willingness to do that visible, we're putting together something I think we'll call the steering board for MIPS Technologies, which will be made up of about ten different people throughout the industry, from semiconductor companies, the operating systems companies, and the systems companies, that will have a certain amount of oversight responsibility for the R&D program at MIPS Technologies, to make sure that we're going to keep the architecture open. They'll report back to the board of directors of Silicon Graphics on an annual basis, as to how we've done in keeping it open.

So it's got some teeth in it, and I think it will influence our engineering managers to make sure that we take into account the needs of the entire industry.

We don't make a lot of money on that. Silicon Graphics as a company makes its money selling great systems. When Acer buys a chip from NEC, we get a little royalty, but we're not going to get rich on that. In fact, we'll never report it, it's so small. It's so small and so insignificant that the SEC won't require that we report it.

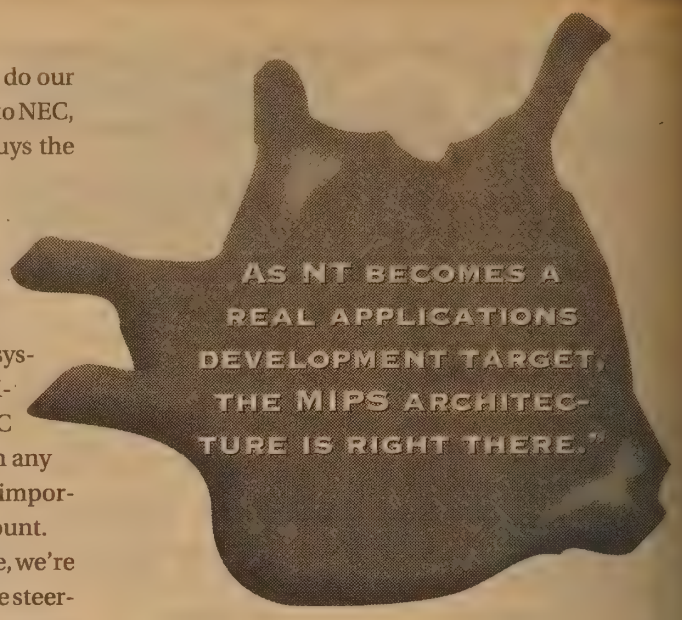
The way we make money is on systems, so the question is why do we even want to keep it open? Well, that gives us access to the very high-technology fabrication facilities in places like NEC and Toshiba. It creates volume for the product, which creates lower-priced products. And having access to those fab facilities allows us to create very high technology products also. So there's a whole set of things that can happen, when you can work in a group of companies like that, that are better. And so we're very committed to having an open approach to the whole thing.

How would you differentiate what you've got with the MIPS chip from what Sun's got with SPARC?

Well, we have many more systems companies than Sun does, and that helps. We have more semiconductor companies than Sun does.

There's a little difference in our relationship in that it seems that Sun's strategy is to say, "Okay, here's the general architecture; go out and design a chip, guys..." And then Cypress designs a chip, and TI designs a chip, and they compete for Sun's business. One of them gets it, and the other one doesn't.

Our approach has been a little different from that—to do a design ourselves, and to license the design to multiple semiconductor houses to produce it. It's the same design, the parts are exactly interchangeable. So you can buy an R4000 from Toshiba today, or you can buy an R4000 from NEC, and they fit in the system the same way. They're competing with each other for our business and everybody else's business. That



seems to me to be a little bit more straightforward, and perhaps a little bit more responsible.

I think the other big difference is the support we're getting from Microsoft, of course, with the NT development program. As NT moves into the market and becomes a real operating system and a real applications development target, the MIPS architecture is right there. That's not true in the case of Sun.

What about NT? NT is not your standard operating system now...

No, it isn't, but our company will be marketing systems with UNIX, and we'll also be marketing systems with NT. So we're working very closely with Microsoft in terms of Silicon Graphics labeled systems, as well as working with Microsoft to make sure that other companies that use the MIPS architecture within systems have it optimized with the NT operating system.

Would it be correct to think of NT as being the unifying factor of ACE right now? There's so much conflicting conventional wisdom about ACE right now that I'll admit to being as confused as the next person.

I feel like the real thing that's happening is that the MIPS community is divided into two sets. There are the people that are really active in the UNIX client-server world, and then there are the people active in the Microsoft world. There are two quite different groups of objectives, and we're involved actively with both groups.

Certainly for the people involved in the Microsoft world, it is Microsoft that's the unifying element, and the idea of developing an alternative to Intel in the PC world.

That's not everybody that uses MIPS. Almost all the MIPS chips that are used today are in the other world, the UNIX client/server world.

So what do you see as the role of ACE at this point?

Well, I think it's a good thing to have. We've tried to narrow the focus into some short-term objectives. The short-term objectives have been to develop what's called an ARC specification—a hardware spec for what a MIPS system should be to be able to run an industry standard operating system. So the ARC spec is out and complete, and multiple vendors have now started shipping ARC systems.

I think the other real objective this year to develop

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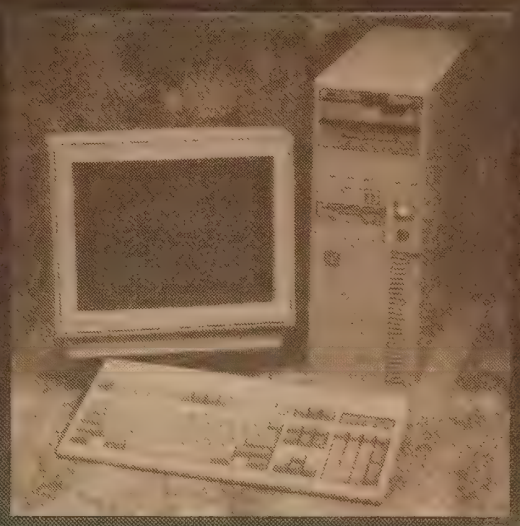

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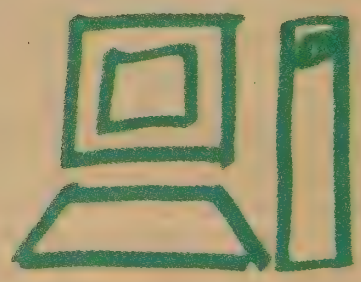

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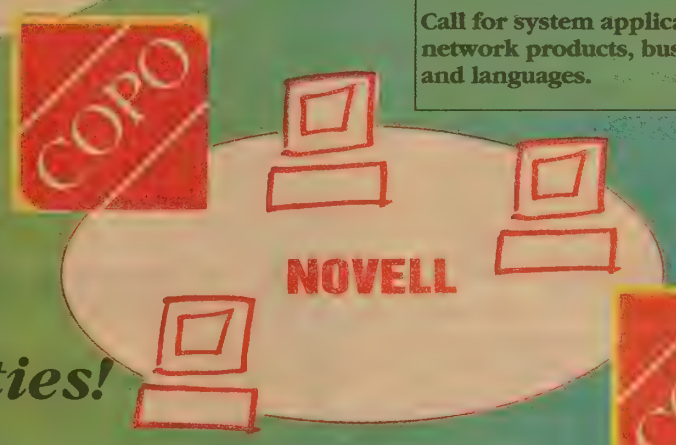

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is to get those ARC systems working well with NT, and to deliver them with NT before the end of the year. And then a third objective is to do the same thing with a relatively standard UNIX.

Those are all 1992 objectives. They're all short-term, and they're all going to happen.

What distinguishes the UNIX side from the NT side, in terms of who the customers are and what they're trying to do?

That's something we could all talk about—what's the difference between UNIX and the new operating systems like NT? A lot of it is background and history and culture, and so on.

Like it or not, the marketplace has divided itself up into a marketplace that's grown up out of the MS-DOS world, and another marketplace that has grown up out of the UNIX world. There is an overlap—it's not as large as people believe it is, but there is an overlap. There's another overlap with the Apple community, of course.

I don't think you can define carefully, in any logical, rational way, what's an NT market and what's a UNIX market. Certainly the UNIX world has grown up more out of the technical, science and engineering environment, versus the PC world, which has has grown up more out of the general purpose user environment. So there are some differences there, but just how that breaks up I don't know. I think it's going to be something of continuous debate in the computer industry for the next five years. We'll see what happens.

In the meantime I think there's a lot of opportunity for a lot of customers and a lot of computer companies to make a lot of money in both markets, and the computer industry's big enough now so that everybody doesn't have to use the same operating system.

And I think it's unrealistic to believe that everybody will. There is a feeling among some people that there is this universal computer, and the idea is for the hardware vendors to make a universal computer, and then all the software people could write for it, and everybody could live happily ever after.

There is a lot of thinking like that, and frankly I think a lot of the issue relative to ACE was that many people felt that ACE was that answer, for the universal computer. There is that certain thought in ACE, but that's not going to happen in a marketplace where you can change a computer in terms of performance by a factor of ten every three and a half years. That necessarily produces some degree of chaos.

I think the computing world will be a little chaotic over the next ten years, with a lot of innovation on the hardware side, which is going to create a requirement for the application software people to write new software.

I think almost all of the software used in the PC and Mac marketplace today will be obsolete in less than five years. And that has to scare every software vendor in the world—except the ones that don't know about it. The smart ones are just figuring it out right now, and we're seeing a lot of new, really innovative application software being written. It's just happening in the last year or two.

Obviously you guys are on the RISC side of the RISC/CISC dichotomy. What is your thinking on that, at this stage of its evolution? The world has changed since we discussed this three years ago...

[laughs] It has, but we haven't changed our view. In the workstation world, we compete against HP, IBM, Digital, and Sun, and there's no one who believes we could compete against those people without a RISC processor. They all have RISC processors, they've all bet their entire strategy on it in the performance end of the marketplace. That tells me what we all already know is true, that RISC processors are higher-performance, given the same semiconductor process and the same period of time.

No matter what Intel says.

So that's a truism, and we're pleased to be involved in the RISC world. It's a necessary technology, and RISC systems, given the same-technology semiconductor fab process, are faster. And they aren't more expensive. So RISC processors give the customer better price/performance, and will, on a continuous basis for the next five years. And Intel's going to try very hard to keep up, and keep as close as possible, but it's not going to work.

Now the issue is going to be, as long as Intel comes within a factor of two or three of RISC performance at a given price, will that keep their current customer base and the current systems activity? There's so much momentum in the PC world that that may be close enough. But they're not going to be able to equal RISC performance. The question is, can they get close enough so that people won't move away from PCs and into workstations?

Continued on page 260

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•101 Enhanced Keyboard	•101 Enhanced Keyboard	•101 Enhanced Keyboard
•IDE Contrl. w/2S, 1P, 1G	•IDE Contrl. w/2S, 1P, 1G	•IDE Contrl. w/2S, 1P, 1G
•MSDos 5.0 w/Manuals	•MSDos 5.0 w/Manuals	•MSDos 5.0 w/Manuals
•MSWind. 3.1 w/Manuals	•MSWind. 3.1 w/Manuals	•MSWind. 3.1 w/Manuals
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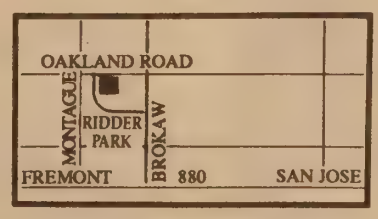

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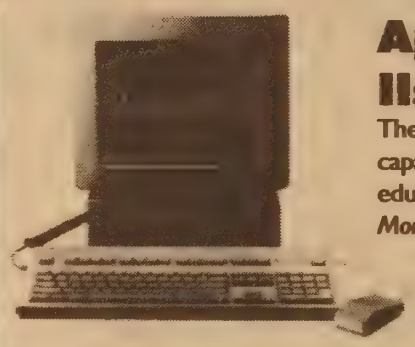
Apple® Macintosh® LC II 4/40

Easy to set up and easy to use, the LC II is excellent for business or education. This most affordable color Macintosh sports a slender modular design that fits easily into your home or work space.

Monitor extra

$1299.



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The Macintosh® IIsi has color and sound capabilities and is an excellent choice for business, education, or home users. 5MB RAM/80 MB HD

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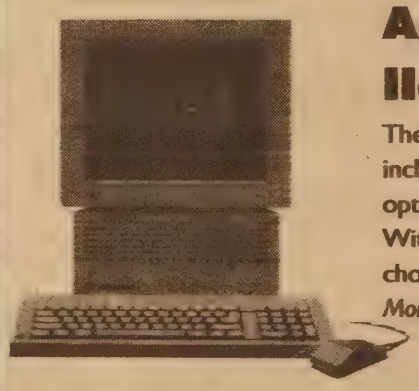

Apple® Macintosh® IIci 5/80

The IIci gives you power with room to grow, including flexible video support built-in and an optional cache card for increased performance. With its System 7 capability, it's an excellent choice for business. 5 MB RAM.

Monitor and keyboard extra.

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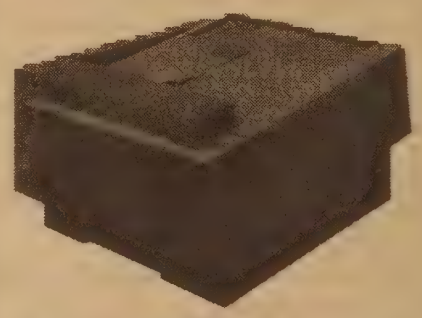
Apple® StyleWriter®

The Stylewriter gives you outstanding laser-like quality results for only a fraction of the cost of a laser printer. It's now 3 times faster than before, and comes with 39 fonts. Compatible with all Macintosh® computers.

$325.



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Apple® Personal LaserWriter® NTR

This new Apple laser printer is one of the fastest in its price range, thanks to an exceptionally fast RISC-based controller card, built-in TrueType™ support, and level 2 PostScript. Dubbed a "milestone" by *MacWorld* magazine.

$1679.

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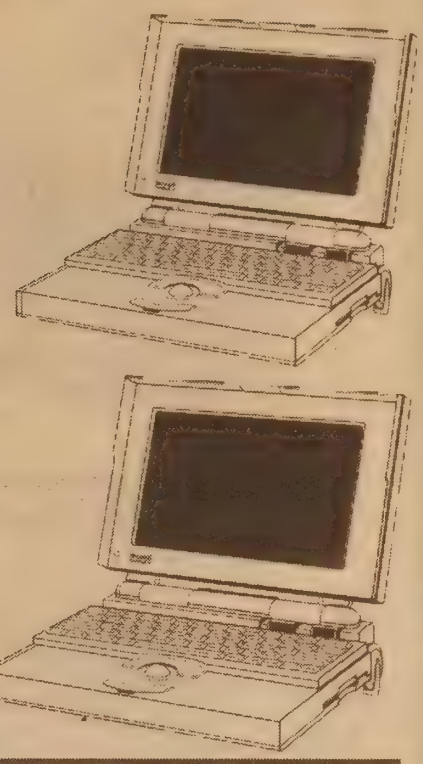

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Take the power of Macintosh with you. The PowerBook runs virtually all Macintosh software, and its unique stress/fatigue-reducing, ergonomic design will save your nerves and fingers. With built-in networking and sound, 4 MB RAM, 40 MB HD.

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The desktop Macintosh for mobile people, this high-performance PowerBook comes bundled with remote communications software and a built-in fax/modem, and features a beautiful active-matrix display.

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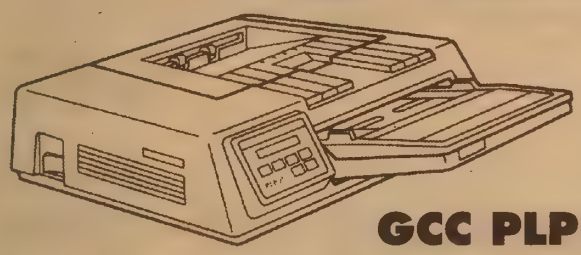

GCC PLP II

Designed to take full advantage of the built-in QuickDraw™ power of Apple® Macintosh®, the True Type™ and ATM-compatible PLPII knocks out a cool 4 pages per minute at 300 dpi, giving you razor-sharp text and graphics.

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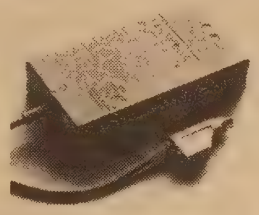

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Send data or faxes straight from your computer via phone. 2400 baud date modem w/MNP5, 9600 baud fax modem. Uses the Mac ADB® port. Has built-in voice/fax switch so you can share your existing phone line.

$249.

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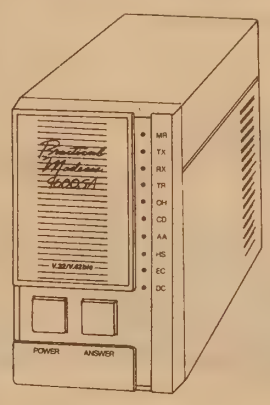

14400 BPS Modem 9600 Fax Send & Receive

Full duplex 14400,BPS V.32 bis error correction w/ 9600b group 3 fax modems. Internal and external for DOS; external for Macintosh.

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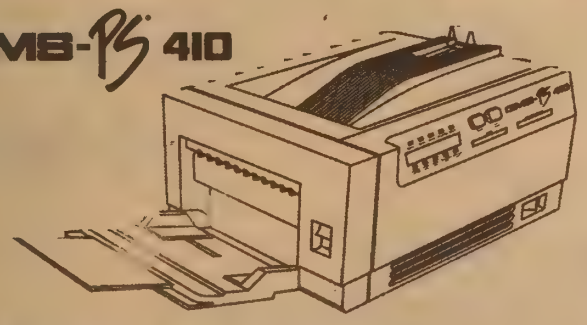

QMS PS410 Printer

QMS listened to its users and built a 4 page-per-minute PostScript® printer with all the most requested features at an affordable price. It's got true Adobe PostScript, with 45 resident fonts and ATM technology built-in for sharp text, it works with IBM and Apple® Macintosh® computers, and its 16 MHz 68020 processor makes short work of complex graphic images.

QMS

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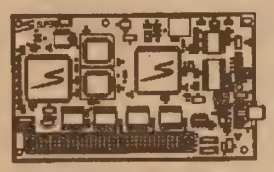

Video Spigot

Turn TV broadcasts or videotapes into digitized QuickTime™ movies you can distribute on disk or edit in your Macintosh.

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NUBUS Version

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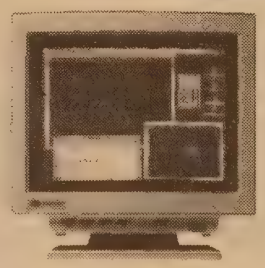

2-Page Color Monitor

This two-full-page, color monitor for Apple® Macintosh® meets tough Swedish radiation emissions standards. It's flicker-free, w/ bright, clean colors, anti-glare coating, a tilt-and-swivel stand, and the ability to switch resolutions at a keystroke.

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ELECTRONICS

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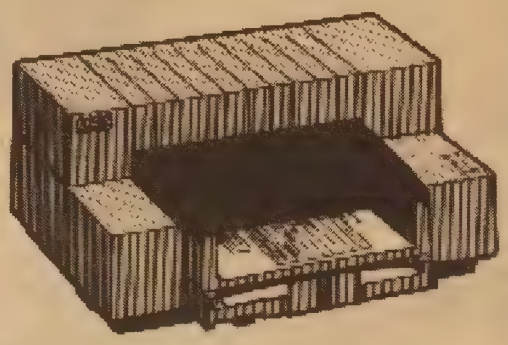

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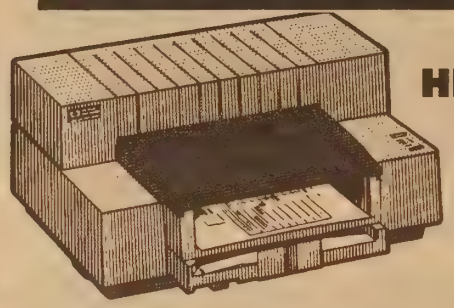
HP DeskWriter Printer

Get laser-like 300 dpi quality from your Apple® Macintosh® or AppleTalk® network, at a price lower than many dot-matrix printers. There's a good reason why these sell as fast as they come in.

$389.

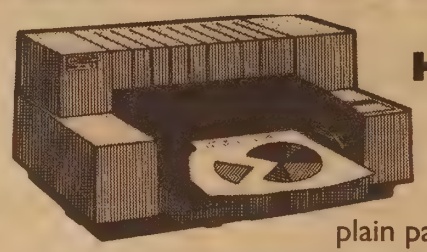
IF YOU'RE NOT SATISFIED FOR ANY REASON, PLEASE LET US KNOW.



HP DeskJet 500 Printer

The DeskJet 500 has been hard to find, but we found some! DOS and Windows users can once again enjoy 300 dpi b&w printing at a small fraction of the price of a laser. Use it with your font-scaling software for beautiful documents.

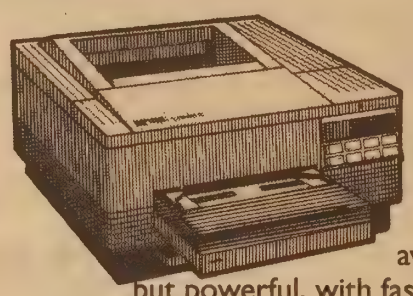
$389.



HP DeskJet 500C Printer

Get 300 dpi laser-quality color printing on plain paper and transparencies, for persuasive design and presentation power at a fraction of the cost of a color laser printer. Supports all major software including Windows; 3 year limited warranty.

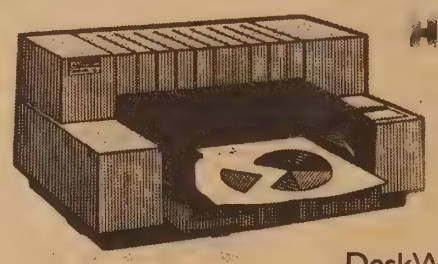
$689.



HP LaserJet IIIP Printer

Whole Earth makes the super-advanced but hard-to-get LaserJet IIIP available again. It's compact but powerful, with faster print speed than other printers in its price range, plus built-in type scaling and upgradeability to PostScript for PC and Macintosh.

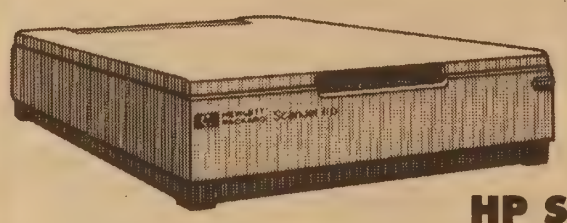
Limited quantity.



HP DeskWriter C Printer

The new HP DeskWriter C adds color capacity to the DeskWriter's already-famous laser-quality black output. It's compatible with popular Macintosh® software and your budget.

$689.



HP ScanJet IIP Scanner

Scan images at 300 dpi resolution, or scan text using OCR software and stop typing it in. It's exceptionally easy to use, and it works with most popular scanner software packages.

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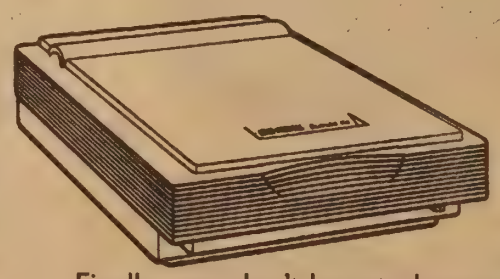

HP ScanJet IIC Scanner

Finally, you don't have to be a technical whiz to scan beautiful color images the first time. Scan in color or black-and-white with equal ease, or scan text and skip retyping hassles. 300 dpi resolution; supports most major scanning software.

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386SX 25MHz Desktop
- 1.2 MB floppy drive
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- 101 Keyboard • AMI BIOS
- 2 MB RAM (expandable to 16)
- FCC class B

(monitor extra)

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386DX-40MHz Mini-tower
- 1.2 MB floppy drive
- 8 expansion slots • 6 drive bays
- 101 Keyboard • AMI BIOS
- 1 MB RAM (expandable to 32)
- FCC class B

(monitor extra)

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486DX-33MHz Mini-tower
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- 2 MB RAM (expandable to 32)
- FCC class B

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386SX-25MHz Desktop
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- 40 MB HD
- VGA card and monitor
- DOS 5.0/Windows 3.1
- 1-year warranty

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- 85 MB HD
- VGA card and **monitor**
- DOS 5.0/Windows 3.1
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IBM® PS/1 386SX - 16 MHz

The IBM PS/1 386SX achieves the exceptional. A home machine with the power of a business model, this computer operates at 16 mhz with 2 MBs of RAM. A 40 MB hard drive stores all your essential data. Comes complete with VGA Photographic™ color display, Microsoft Works® and 3 months free Prodigy℠ for on line home shopping, banking, travel arrangements and more.

While supplies last! $1079.

Includes:
- **Internal Modem**
- **3 free months Prodigy on-line service**
- **DOS 5.0 (pre-loaded)**
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- **Microsoft Works for Windows**
- **IBM Mouse**

IBM® PS/2® L40SX Notebook

Full featured, fast and flexible, the L40sx is IBM's no-compromise notebook PC. 2MB of RAM expandable to 18 MB, VGA display, 20 Mhz 80386sx processor and 60 MB hard drive make this system an outstanding choice for the business traveler.

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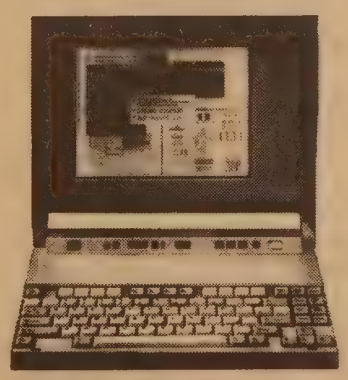

IBM® PS/1® 386SX-20 MHz

This computer lets you finish even complex jobs on time and with style. Note the 14-inch low-emission VGA color monitor. And under the case, the chameleon-like 2123 crams three expansion slots, a bay for an extra 5.5 drive, and 2 MB RAM (expandable to 16).
Includes: Internal modem, 3 free months of Prodigy on-line service, DOS 5.0, Windows 3.0, Works for Windows, and IBM mouse.

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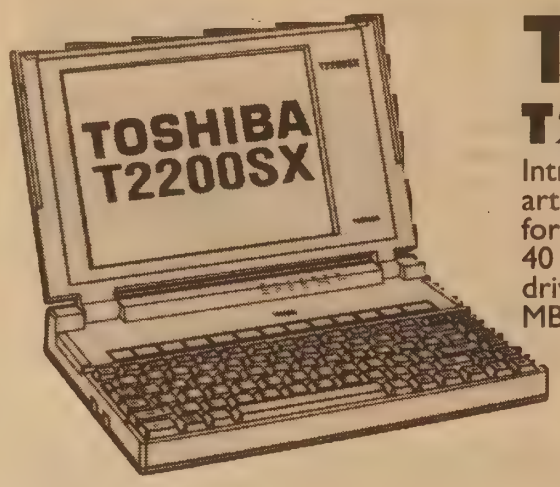

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Introducing the T2200SX— state-of-the-art features in a 5.5 pound notebook format! • 20 MHz, 386™SX processor • 40 MB hard drive • 1.44 MB diskette drive • 20 MB RAM expandable to 10 MB • VGA display with 16 gray scales

$2799.

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Here's the easiest, most complete way to organize your daily business activities. Full-featured contact management including calendar, mail-merge, printed reports and more. Perfect for laptops!

FOR YOUR NOTEBOOK **$89.**

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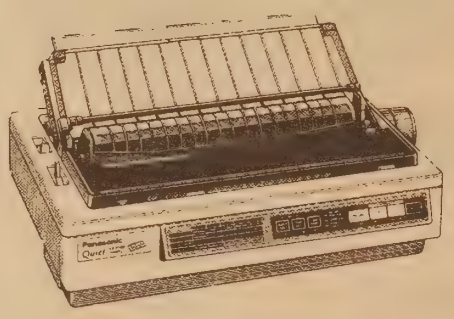
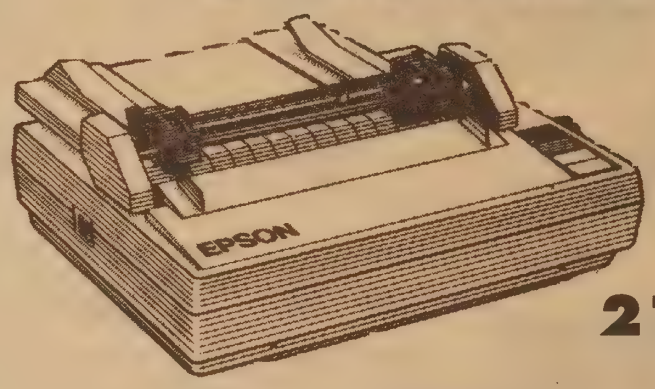


Epson LX-810

9 Pin • SmartPark™ paper handling • 200 CPS Super draft • 30 CPS NLQ • High resolution graphics

$159.

Panasonic®



Panasonic 2180 Printer

9-pin, quiet technology dot matrix printer • 240 cps • 6 resident fonts • Color option kit available.

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Manufacturing Company, Inc.
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A simple solution to one of life's little problems. Positions copy perfectly while using no desktop space; attaches quickly and easily.

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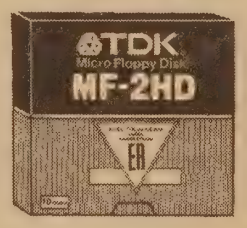

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Electron Beam Cured Binder provides a smoother disk surface with less shedding, friction and dropouts • Full lifetime replacement warranty 3.5" High density 1.44 MB10 pack

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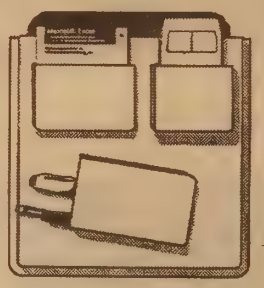

Utility Pack

Conveniently stores mouse, mouse pads, diskettes, paper and pens• Easily attaches to any flat surface • Made from recycled plastic
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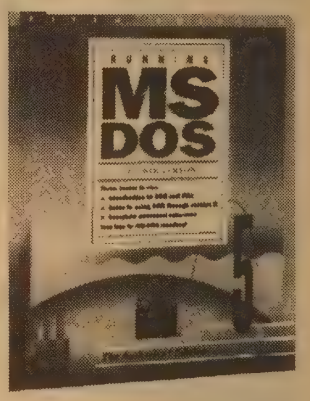

Running MS DOS

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Errors subject to correction. Limited to stock on hand.

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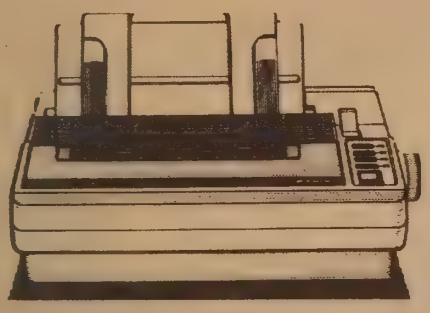

Citizen GSX 130

A top-quality 24-pin dot matrix printer. 180 cps, 10k memory upgradable to 32k, 4 resident fonts and optional color upgrade.

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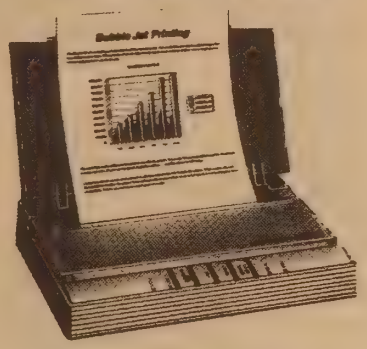
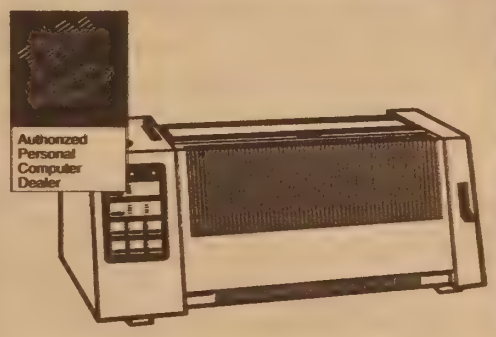
Canon



Canon BJ10e

The Canon BJ10e gives you high-quality document, anywhere, anytime. This portable printer has 360 dpi resolution and battery operation. Optional battery and sheet feed.

$329.



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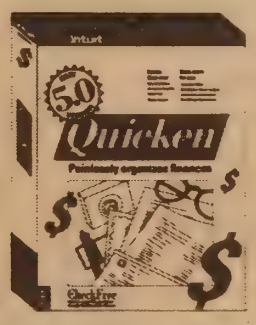

Inuit Quicken

Takes the headache out of personal or small-business managemennt. In Macintosh, Windows, and mouse supported DOS versions.

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System Connection

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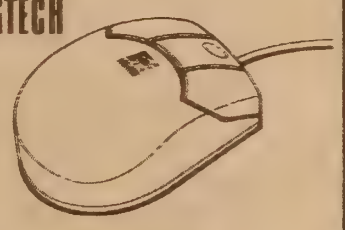
LOGITECH



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BIOS Diversity In Your Computer

Mr. BIOS Lets You Fine-Tune Your Computer Like No Other BIOS

BY WOODY LISWOOD

The BIOS (Basic Input Output System) chip that runs your computer may not be the sexiest thing happening around your work desk, but without it, you don't have much of a computer. After discovering Mr. BIOS, a replacement BIOS, it felt as though I had found the best of the BIOS chips available today.

Mr. BIOS has more options than any other BIOS I've seen, and with these options I can fine-tune my computer to start up and run the way I want. The BIOS chip setup routine lets you establish this configuration. With Mr. BIOS, you access the setup menu by pressing ESC during POST (Power On Self Test). I liked its top bar menu structure better than the more common displays that use the return key or the spacebar to change items.

WORKING WITH MR. BIOS

The Summary screen contains the information that Mr. BIOS can change, including CPU type, manufacturer, revision number, and speed; boot speed, as low or high; and math chip type and manufacturer.

For the clock speed, you can select either the US or International time and date formats. Mr. BIOS can automatically change its time for daylight savings.

Mr. BIOS detects and displays the type of video card you are using. If you have a dual video system, they will be designated as primary and secondary devices. For the primary video device the options are none, monochrome, CGA fast, CGA slow, V/EGA mono, and V/EGA color.

Mr. BIOS provides the typical support for hard disk drives. The summary shows the number of cylinders, number of heads, sectors per track, precompensation, and landing zone. You can select from the normal drive types, or create two special types for yourself. Additionally, when running an IDE drive, you can explicitly turn on drive translation. There is also an anti-virus feature that prohibits changes to the main boot sector or low-level format of the disk. If you have the C drive as your boot drive, this helps prevent viruses that infect your computer when you boot from a floppy.

For floppy disks, there is support for four drives and five different drive types, including the 3.5" 2.8MB format.

The Boot sequence can be programmed as A then C, C then A, or either by itself. Or you can have the computer prompt you with a menu to select which drive you want to boot from. For speed, I set it just for C so the A drive is not queried during each startup. If I run into a problem with my C drive (and it does happen, occasionally), I can change back to A by pressing ESC during the memory test routine.

Keyboard controls allow you to enable or disable number lock, set how many characters per second you get when you hold down a key on the keyboard, and what type of delay you want before the typematic kicks in. The default is .5 second. After much experimenting changing the default, I left the .5 alone.

Under Mr. BIOS's First Aid menu you can install a special Novell keyboard manager to help if your keyboard has any problems on a Novell network. First Aid can also keep the A20 gate always enabled, which may help with some problems when you are running

Continued on page 258

I do love the little guy with the great innovation. If you have any BIOS-related problems on your computer, I recommend getting the latest version of Mr. BIOS.

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"BEST SCALABLE CARTRIDGE FOR THE HP LASERJET III"
PC Magazine

Sensational!

There's no better word to describe IQ Engineering's two new **scalable** font cartridges for all HP LaserJet® III printers. The new Super Cartridge™3/*Professional Edition+* and *Creative Collection* have the **largest variety** of scalable typefaces available—at the most competitive prices. With 66 fully scalable typefaces and fonts on the *Creative Collection* and 72 on the *Professional Edition+*, each has **more** typeface selections than any other font cartridge on the market. With list prices of just $395 each, that's under **$5.99 PER TYPEFACE** —less than most soft fonts!

SELECTION: PC Magazine named the Super Cartridge 3/*Professional Edition* "the **best** scalable cartridge for the HP LaserJet III." With IQE's high quality output, it's easy to see why. You can be **creative** with the *Creative Collection's* 22 great display faces like IQE Copperplate, Champs Élyseés and **Bodoni Poster** plus 44 text fonts like IQE's Goudy OS, Letter Gothic and Souverin. The *Professional Edition+* essentially gives any HP LaserJet III family printer twice the number of typefaces available on most **PostScript**® printers, including equivalents for the 35 standard PostScript faces. With preferred serif faces like IQE's Schoolbook and Garamond OS, decorative fonts like English Blackletter and *Chancellory*, and scalable "fixed pitch" Prestige Elite and Courier, the *Professional Edition+* has an unequaled **ASSORTMENT** of typefaces. It even has small caps and old style figures—fonts not available on any other cartridge. And since each Super Cartridge 3 product has a **unique selection** of fonts, you can use both or pick the one that best suits your needs.

FEATURES: IQE's Super Cartridge 3 products' unique features are clearly **unmatched** by any other font products. Each contain PostScript compatible font spacings for Type 1 & **Linotronic** compatibility. Both have scalable fixed pitch fonts for spreadsheets & tables, and they can both access 39 different symbol sets simultaneously. They're also the only cartridges to come with **free** ATM® and HP Intellifont® Windows screen fonts, (a $199 value).

SPEED: IQE's Super Cartridge 3 products are designed with **speed** in mind. Because they were created using the most advanced PCL/5 technology available today, they print fonts significantly faster than other scalable cartridges, soft fonts, or PostScript printers. In fact, IQE's fonts can even **print** faster than LaserJet III fonts! What's more, they do all this without extra printer memory or an expensive accelerator board.

WORRY-FREE NETWORKING: The best font solution for networked PC's, IQE's Super Cartridge 3 products are virtually worry-free on LAN connected printers. They are **easy to install** and use. Just plug the cartridge in, and forget about it. Users always have their fonts **AVAILABLE** and network managers won't need to be concerned about font management or language switching. And the Super Cartridge 3's quick printing speed reduces the wait in print queues.

GREAT DEAL: All IQE Super Cartridge products come with a 30-day **money-back** guarantee, a limited lifetime warranty, and the best customer support in the industry. Order now and get IQE's Super Cartridge 3 products at a **special price** and start making a sensation of your own!

Manufacturer / Product Name *(For LaserJet III, IIIP, IIID, IIISi, Brother HL-8V/10V, Epson EPL 8000)*	*Number of Scalable Typefaces*	*List Price*	*Price Per Typeface*	*Number of Type Families*	*PostScript Compatible Font Spacing*	*Fully Scalable "Fixed Pitch" Typefaces*
IQ Engineering Super Cartridge 3 Professional Edition+	72	$395	$5.49	20	YES	YES
IQ Engineering Super Cartridge 3 Creative Collection	66	$395	$5.99	31	YES	YES
IQ Engineering Super Cartridge 3 Professional Edition+ & Creative Collection Bundle	138	$745	$5.40	51	YES	YES
Pacific Data Products™ Complete Font Library™	51	$399	$7.82	15	NO	NO

Super Cartridge™

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- 640x480 Gray Scale Screen
- Ni-CAD Rechargeable Battery
- Serial and Parallel Ports
- Size: 11" x 8.6" x 2"
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- Carrying Bag
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- Windows 3.1

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- 80MB IDE Hard Drive
- 640x480 Gray Scale Screen
- Ni-CAD Rechargeable Battery
- Serial and Parallel Ports
- Internal Fax/Modem
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- Carrying Bag
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486DX-50C ISA	768	938	1,196	1,326	1,366	1,434	1,484	1,646	1,686	1,796
486DX2-50C ISA	598	768	1,026	1,156	1,196	1,264	1,314	1,476	1,516	1,626
486DX-33C ISA	428	598	856	986	1,026	1,094	1,144	1,306	1,346	1,456
486SX-20C ISA	188	358	616	746	786	854	904	1,066	1,106	1,216
386DX-40/64C	184	354	612	742	782	850	900	1,062	1,102	1,212
386DX-33/64C	178	348	606	736	776	844	894	1,056	1,096	1,206
386DX-25/64C	174	344	602	732	772	840	890	1,052	1,092	1,202
386DX-25	148	318	576	706	746	814	864	1,026	1,066	1,176
386SX-25	108	278	536	666	706	774	824	986	1,026	1,136
386SX-16	98	264	522	652	692	760	810	972	1,012	1,122
286-20	72	230	488	618	658	726	776	958	998	1,108
286-16	62	224	482	612	652	720	770	952	992	1,102
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BASIC SYSTEM CONFIGURATION:
Motherboard & CPU, 1MB (512KB for 286 systems) memory installed, 1:1 2HD/2FD controller, 1.2MB or 1.44MB Floppy Drive, Internal Clock/Calendar, Mathematical Coprocessor Socket, Enhance Case with Power Supply, and 101-Key Enhanced Keyboard.

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PC Computing, April 1992

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Cyrix

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Laptop Memory

TOSHIBA

Memory Added	Price
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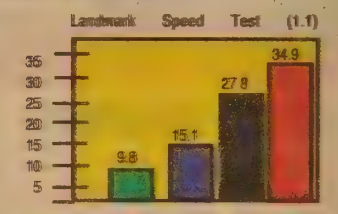

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Your First Computer

So You Want To Be A Programmer

BY MIKE MARKOWITZ

Just as anyone who owns a pencil is, at least potentially, a writer, anyone who owns a computer is potentially a programmer. Software is created by people.

The applications that help us to get our work done, the games that amuse us, and the operating system software that makes it all possible were all written by humans who belong to the same species as The Rest of Us. If you have ever been awestruck or delighted by something you saw on a computer screen, you must have thought, however secretly and fleetingly, "I wish I could do that..."

The Dictionary of Occupational Titles (1977) offers a quaint description of what a "programer" (sic) does:

> Selects symbols from coding system peculiar to make or model of digital computer and codes successive steps of completed program for conversion to machine instructions to process data or control industrial processes; Reads and interprets sequence of alphabetic, numeric or special characters from handbook or memory for each program step to translate into machine language or pseudo (symbolic) code that can be converted by computer processor into machine instructions. Records symbols on worksheet for transfer to punchcards or machine input tape ...

Here is a more contemporary definition:

> **real programmer**: n. A particular sub-variety of hacker: one posessed of a flippant attitude toward complexity that is arrogant even when justified by experience. Real Programmers never use comments or write documentation: "If it was hard to write," says the Real Programmer, "it should be hard to understand." Real Programmers can make machines do things that were never in their spec sheets; in fact, they are seldom really happy unless doing so. Real Programmers live on junk food and coffee, hang line-printer art on their walls, and terrify other programmers —because someday, somebody else might have to try to understand their code in order to change it. Their successors generally consider it a {Good Thing}that there aren't many Real Programmers around any more.

HOW CODE BECOMES SOFTWARE

Programmers use computer languages. Like writers and speakers of "natural" languages, programmers strive for an elusive quality called elegance.

Elegant code is hard to define but easy for programmers to recognize; it is simple but powerful; it does more with less. The opposite of elegant code is spaghetti code, a tangle of patched-together statements that gets the job done, but in a way that nobody else can understand or reconstruct.

Unlike the natural languages in which we speak, read, write, and think, most computer languages are utterly intolerant of ambiguity. A programmer can be slovenly in matters of diet, hygiene, and attire, but he or she must be fanatically meticulous about spelling, syntax, indenting, and parentheses. Actually, the software tools that programmers use to compose and edit their code take care of some of these details automatically. Programmers hit wrong keys, just as musicians hit wrong notes, but in both cases, the goal of the performer is "zero defects."

Just as anyone who owns a pencil is, at least potentially, a writer, anyone who owns a computer is potentially a programmer.

Natural languages evolved in order to express feelings and enable humans to coordinate their social behavior in creative and flexible ways. This took tens of thousands of years. Computer languages evolved in order to allocate memory addresses, move data bits from one register to another, and control millions of simple, electronic events without requiring the programmer to worry about what is actually happening inside the circuitry. The entire evolution of computer languages has taken less than fifty years; but computers that an ordinary person could buy, take home, and experiment with have only been around for less than fifteen years. Be patient, child. Things are gonna get easier.

The fundamental and ancestral computer language is binary or "machine language"; strings of zeros and ones that a computer interprets as instructions.

This is unwieldy for humans and so machine language begat assembly language, in which easily remembered three-letter codes like JMP and MOV represent instructions and numbers are expressed in compact hexadecimal form (base 16).

Each type of computer has its own dialect of assembly language, and it is often the best choice when speed and compactness are essential. The software tool that programmers use to write assembly language code is usually called a Macro Assembler.

Since assembly language can be tedious to use, "high-level languages" were created, starting with FORTRAN and COBOL in the 1950s. In high level languages a single word or command can represent an entire structure or sequence of machine-level events. As computers became increasingly important in higher education, languages, notably BASIC and Pascal, were developed to make it easier to teach programming. A version of BASIC is often included with the operating system when you buy an IBM-compatible, even though no one ever actually uses it any more. At present, the computer language most widely used for developing personal computer software is C (that's right, just the capital letter "C"), which was originally developed at Bell Laboratories as part of the UNIX operating system. The idea behind the development of C was to make it easier to "port" or convert programs written on one kind of computer so that they could be run on another kind of computer. The software tool

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that programmers use to write C code is called a compiler, and there are several competing C compilers for each major operating system.

HOW PEOPLE BECOME PROGRAMMERS

Many of the younger professional programmers you meet tell you that they started out as hobbyist programmers on first-generation personal computers. More senior programmers, who grew up before personal computers, tend to have backgrounds in business data processing, science, or engineering. What should you do if you want to be a programmer?

TAKE A COURSE?

Many universities have departments of Information and Computer Science that offer courses on programming. Practical programmers tend to be skeptical about the theoretical orientation of academic programming courses. A really skillful programmer can earn a lot more than what a community college pays an instructor, but there are still people who teach for the love of teaching.

READ A BOOK?

Library shelves and bookstore racks groan under the weight of computer books, and new ones are published every week. For the Macintosh, Addison-Wesley publishes the standard reference books. For MS-DOS, Microsoft Press offers a wide range of titles for programmers. Also dependable are the handbooks published by Que, SAMS, and Brady (all three are now divisions of Prentice Hall Computer Publishing).

FOOL AROUND?

Macintosh users get a toy programming environment for free. It's called HyperCard and it lets you write "scripts" in a lovely, almost-natural language called HyperTalk. HyperTalk scripts are attached to "objects," not written out in great continuous blocks of code. You can't create "real" stand-alone, heavy-duty appplications in HyperCard, but you can discover whether or not programming appeals to you.

Many popular software packages contain their own little user-accessible programming languages hidden behind the term "macro." A macro is a series of commands or instructions written by a user, and saved in a file that a program can execute on request. Macros can be used to automate repetitive tasks, manipulate data, and control the flow of the program. You can do some amazing things with macros in WordPerfect or Excel if you take the time to study the manuals, work through the tutorials, and learn by doing.

BUY A COMPILER?

If you are serious about programming, at some point you have to sit down and start thumping the keyboard (and clicking mouse buttons). This means you want a high-performance, industrial-strength compiler like those published by Borland (Turbo C) or Symantec (Think C).

JOIN A GROUP?

Aspiring Mac programmers should hook up with the Apple Programmers and Developers Association (APDA). Many local user groups have special interest groups for programmers. You definitely need a modem—the major national online services such as CompuServe, GEnie, America Online, and Prodigy offer extensive forums, download libraries, and other services useful to beginning programmers.

APPRENTICE YOURSELF TO A GURU?

The best way to learn any craft is to find someone who knows it supremely well and is willing to teach you by example, guided practice, stern correction, and gentle admonishment. In exchange, you make yourself useful in the performance of small, real tasks.

For most of human history this was how people learned to be magicians, alchemists, musicians, or healers. This would be a good way for people to learn programming, if the social organization of time, work, and money would only make it easier to create such situations.■

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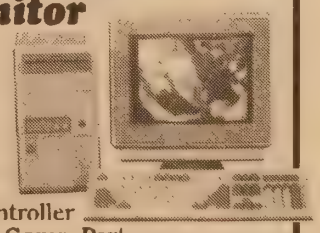

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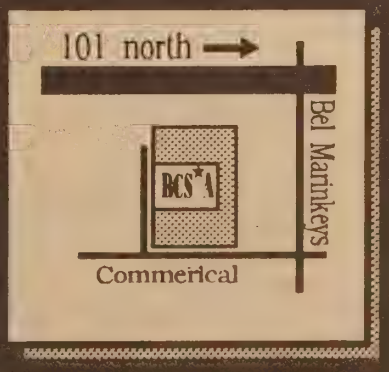

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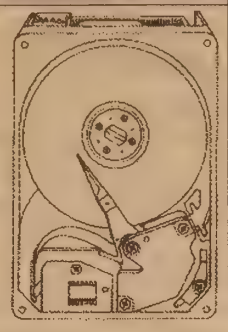

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CCITT V.32 bis with V.42 bis	*CCITT V.32 bis with V.42 bis*
Internal $309	Internal $329
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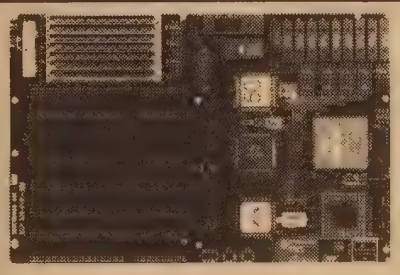

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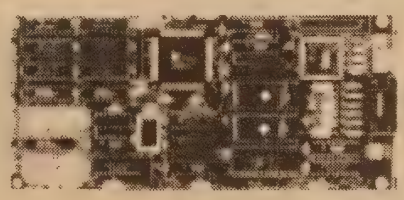

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- 1MB DRAM w/Sierra Chip Set
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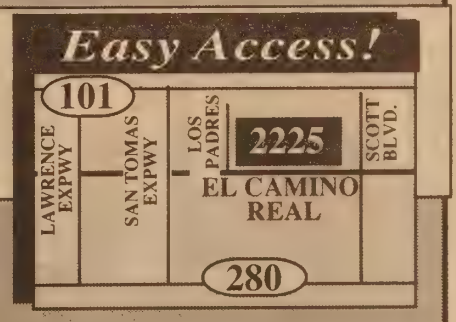

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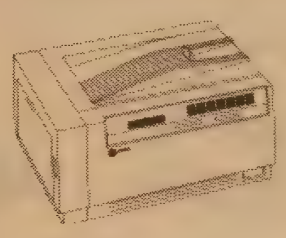

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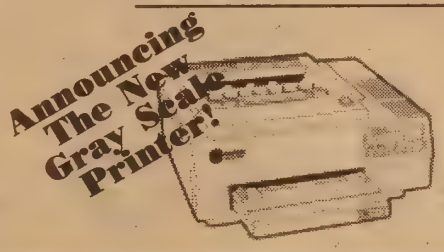

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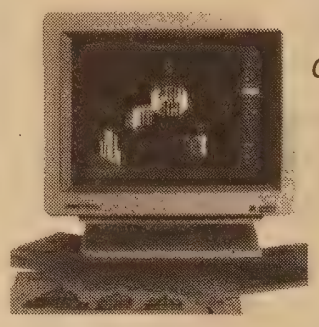

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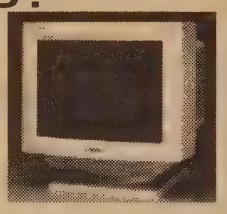

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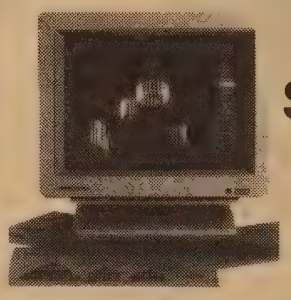

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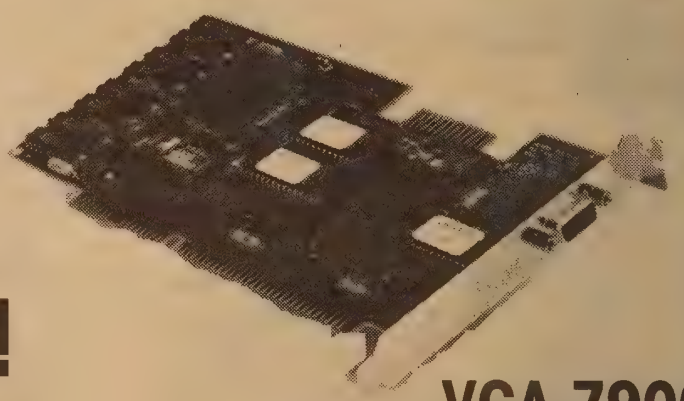

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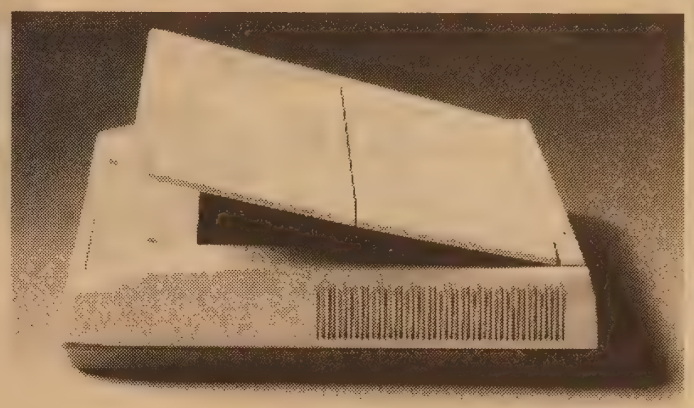

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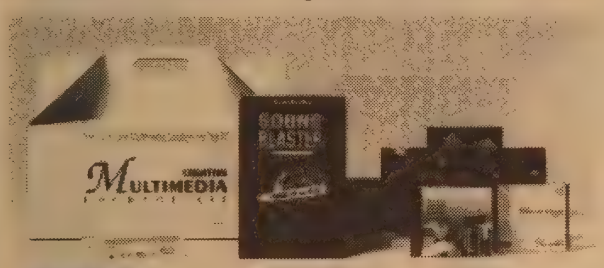

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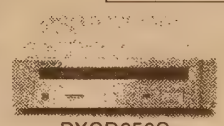

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- Includes 4 large software titles
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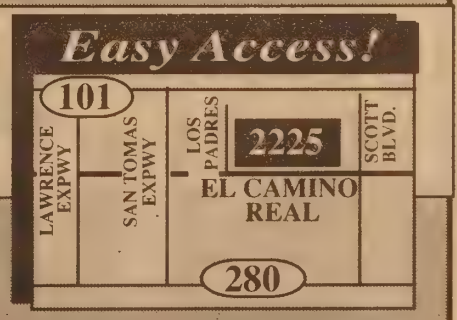

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Why are Customers coming back ?

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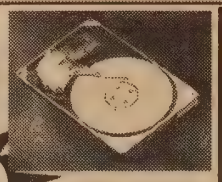

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The World's First & Original Booksize Desktop Computer

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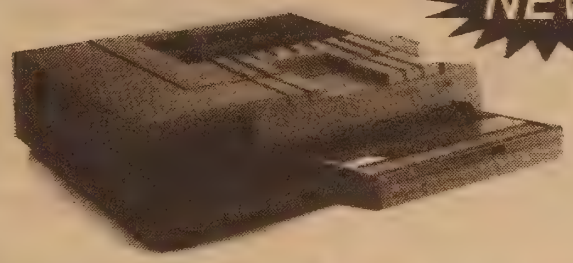

- Industry's best warranty: 5 years on printhead, 1 year parts/labor on printer
- PC Magazine Editors' Choice- June 12, 1990
- 4ppm, 300dpi: crisp blacks, publication quality output
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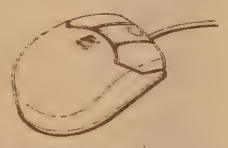

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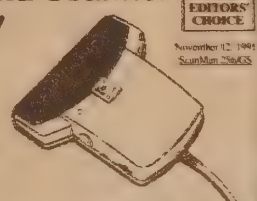

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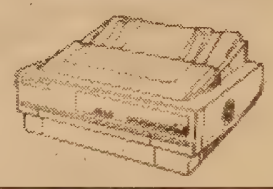

- 24-pin, 315cps
- 12 built-in fonts
- 2 year warranty

LQ-1070

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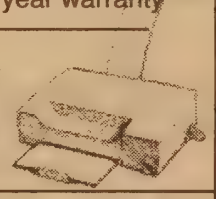

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13 Scalable fonts!
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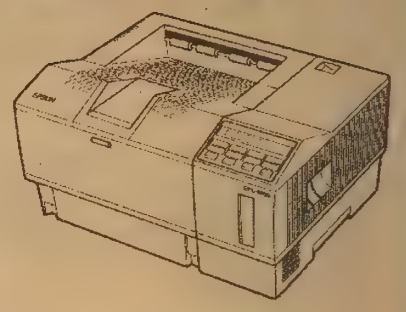

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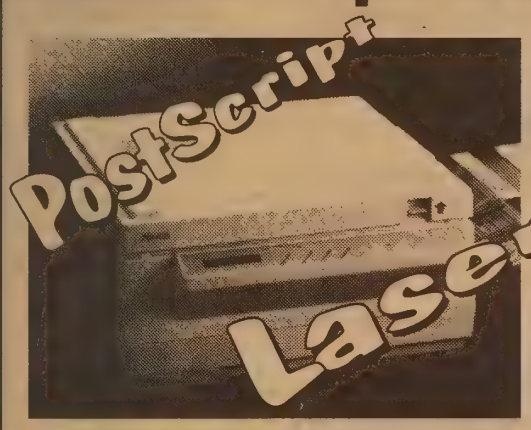

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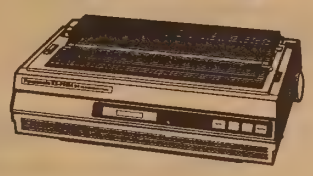

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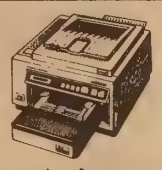

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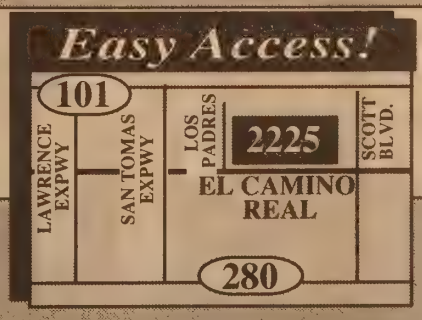

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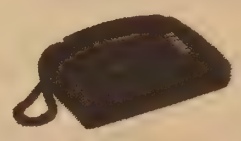

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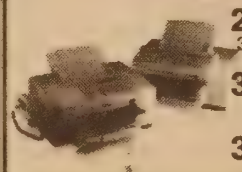

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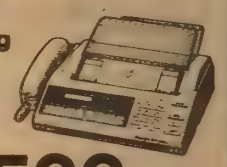

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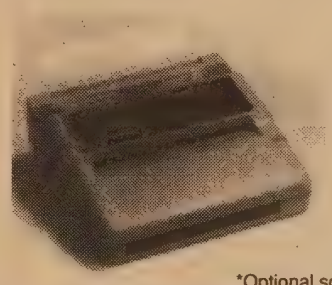

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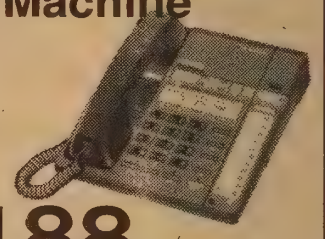

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Advanced Features Of System 7

New Tools And Possibilities

BY LENNY BAILES

When people gather to talk about System 7, you might well hear grumbling about increased memory requirements and incompatibilities with favorite INITs and DAs. But application developers are gradually catching up to the potential in System 7's advanced features. The increased productivity System 7 brings to major applications like Excel, PageMaker, Word, and WordPerfect will often outweigh the inconvenience and expense of necessary hardware or software upgrades.

In earlier installments of this series, we looked at System 7's enhanced file management networking, and virtual memory features.

Some users still complain that System 7's virtual memory feature slows down performance too much for it to be really useful. But without virtual memory, most Macs simply can't run memory-hungry applications like Adobe Photoshop or PixelPaint Professional. The decrease in speed caused by making the hard disk run code can be offset somewhat by establishing a larger RAM cache (256K or more) and fine-tuning the disk with optimization utilities. (Both Symantec and Central Point Software have products that improve hard disk performance by rearranging the file structure.)

System 7 offers three powerful productivity enhancements that any Macintosh user should be aware of: "Publish and Subscribe," "Apple Events," and "QuickTime." (QuickTime is also compatible with System 6.0.8 and above.) If you haven't tested these features, you're missing something useful.

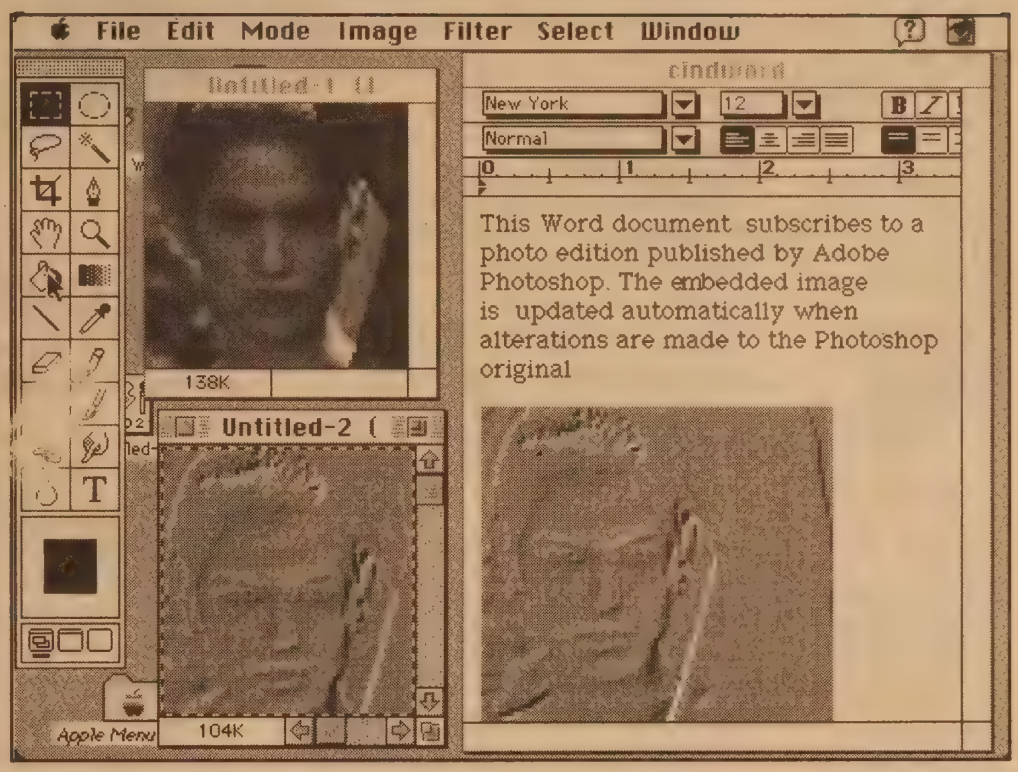

Figure 1: Microsoft Word subscribes to a photo file published by Adobe Photoshop. Changes made in the Photoshop file are reflected in the Word version.

PUBLISH AND SUBSCRIBE

Publish/Subscribe is now incorporated into applications from most major vendors, although some, like PixelPaint Professional and Photoshop, don't document it in detail. The Publish/Subscribe option saves you the chore of reopening and modifying documents that share common data elements. Applications can publish "editions" consisting of graphic, text, or numerical data that become available on the desktop to other programs.

If you "subscribe" to an Excel spreadsheet or a bitmapped graphic in a PageMaker 4.2 document, your document is updated automatically each time you modify the data "edition" in the publishing program. You don't have to reedit the PageMaker file. You can publish the same spreadsheet data or chart for use in both PageMaker and Microsoft Word. Updating the data in the publisher automatically updates the data in each subscriber. Some applications, like PixelPaint Professional 2.0, are "publishers" only. PageMaker 4.2 is a dedicated "subscriber." Excel 4.0, Photoshop 2.0, MS Word 5.0, and WordPerfect 2.1 work both ways—they can either subscribe to or publish an edition.

There are small differences in the way individual programs implement the "Publish" feature. In Photoshop, for example, you have to publish the whole document, but in most of the others you can select and publish individual objects within a document.

Microsoft's Excel 4.0 offers a dual standard for linking data to other programs. In addition to System 7's Publish/Subscribe option, Excel supports the Object Linking and Embedding and Dynamic Data Exchange features Microsoft developed for Windows on the PC. Excel is probably the most "connectable" application on either the Mac or PC platform. Microsoft has made it extremely convenient to link spreadsheet data or charts to other applications. By double-clicking on a linked object, you automatically bring up an appropriate dialog box to update a pub-

Apple Events scripting is more complex than simply writing a HyperCard stack. The payoff may be worth it, if you have a tedious data-gathering routine that you'd like to automate.

RESOURCES:

Operating System Tools
System 7, QuickTime extension, System 7 Tuneup Kit
Apple Computer, Inc.
(408)996-1010
(You can also purchase these upgrades without written documentation from BMUG, the Berkeley Macintosh User's Group, 2055 Center St., Berkeley, CA 94709, 510/849-9026)

Frontier, $249
Userland Software, Inc.
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(415)325-5700

System 7 Pack
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Sherman Oaks, CA 91423
(818)788-4747

System 7 Savvy Applications
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SuperMac Technology
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WordPerfect 2.1
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lished edition. You can change a Publish and Subscribe link to a DDE link for a Windows application on a network. (Other applications are a bit more cumbersome than Excel—they may require you to pull down an options menu and fill in dialog boxes to publish an edition.)

APPLE EVENTS

Apple Events is a cousin to Microsoft's OLE. The Apple Events script language allows data to be dynamically exported from one application to another. It also permits one application to launch another in response to input, or at a designated time. Apple's HyperCard has built-in Apple Events support that can be used to open stacks and execute specific functions, remotely.

Currently, only a few programs support Apple Events, but third-party products can be used to integrate Events into ordinary Mac applications. System 7 Pack, from ISIS International, adds comprehensive Apple Events support to Acius's 4th Dimension. With System 7 Pack, 4D can execute data searches, build records, and export files to Excel for recalculation—then return the data to 4D and generate a report. Figure 2 shows a sample script included with System 7 Pack that links a HyperCard stack to a 4D database. The HyperCard stack serves as a simple front end to the more powerful 4D data engine.

System 7 Pack includes both a high-level and low-level interface. You can include preprogrammed routines into 4D procedures simply by choosing them from the Procedures menu, or you can build your own Apple Events functions from scratch. System 7 Pack requires 4D v2.22 or later, and can also be used in conjunction with Userland's Frontier. (Frontier is a third-party batch and scripting language that adds Apple Events support to any Macintosh application. Frontier allows you to execute Events at specified times, wait for user input, or accept keyboard input into variables.)

Note: These packages ship with a few sample procedures to illustrate their potential power, but to get your money's worth out of them, you'll need to do some reading and thinking. Apple Events scripting is more complex than simply writing a HyperCard stack. The payoff may be worth it, if you have a tedious data-gathering routine that you'd like to automate. For instance, Software Ventures' MicroPhone can be programmed to call an online database on a daily basis, download data, and automatically export it to 4D or Excel.

QUICKTIME

QuickTime is a more right-brained toy that allows you to play back animated movies in a variety of applications.

Figure 3 shows a 3-D anatomical movie embedded in a WordPerfect document. Double-clicking on the knee rotates the picture through 360 degrees. The usefulness of this feature as an educational tool should be obvious, and it's fun, besides. WordPerfect 2.1 includes a set of controls that regulate the playback sound, speed, and direction of an embedded movie. All you really need to get started with QuickTime is the special Apple extension (available from BMUG). Already there are hundreds of free movies and shareware viewers around, even if you don't have a program like WordPerfect 2.1. Although QuickTime is a post-System 7 development, you can also use the extension with any Apple System version from 6.0.8 on up.

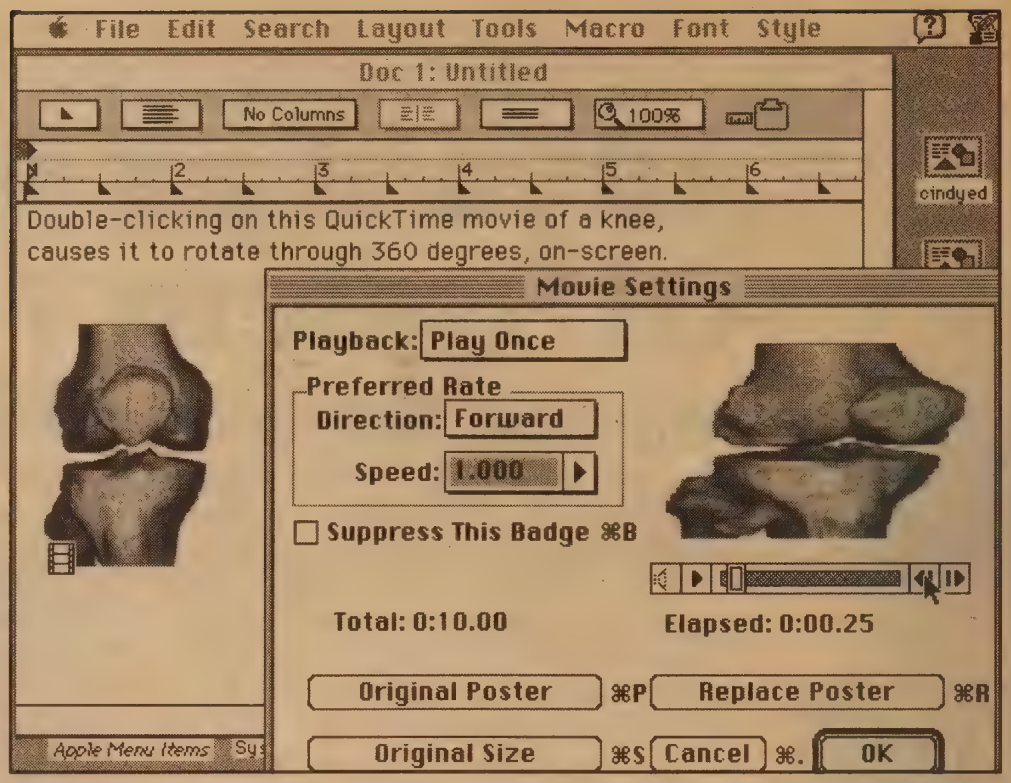

Figure 3: A 3-D anatomical movie embedded in a WordPerfect document. Double-clicking on the knee rotates the picture through 360 degrees.

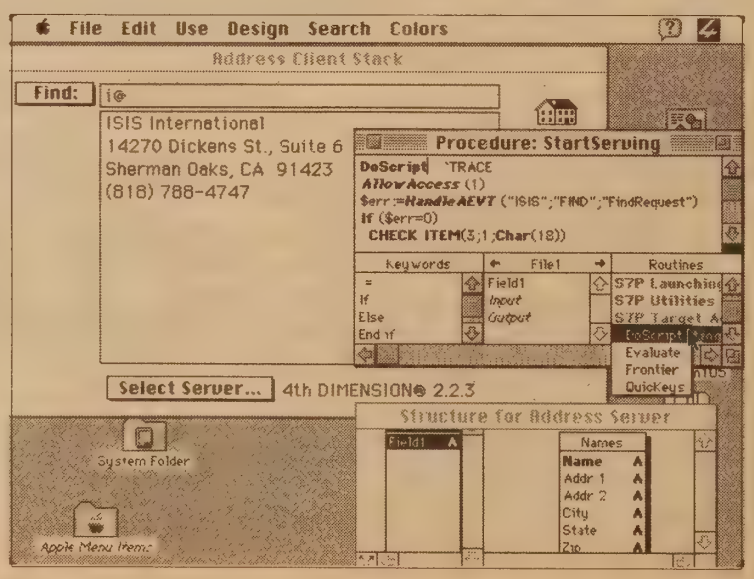

Figure 2: A sample script included with System 7 Pack that links a HyperCard stack to a 4th Dimension database. The HyperCard stack serves as a simple front end to the more powerful 4D data engine.

ONE MORE TIME: SHOULD YOU UPGRADE?

Even after reading about all of these great, improved features, some people will still have doubts about upgrading to System 7. Is it worth the time and effort? There's no doubt that System 7 requires more memory (4MB is a reasonable minimum). You may also have to purge your system of DAs, INITs, and some applications written before 1990. Many people who experience difficulty with System 7 don't pay sufficient attention to these basic truths.

The original System 7 release from Apple also had some weird bugs that have since been eliminated. (The System 7 v1.1.1 tuneup disk is available from either Apple or BMUG.)

Despite the grumblings and tales of woe that I've heard from some people describing unhappy experiences with System 7, I've encountered very little of this, personally. BMUG's technical support staff tends to agree that System 7 is safe and dependable at this stage in its career. The new features it adds to the Mac are well worth investigating. ■

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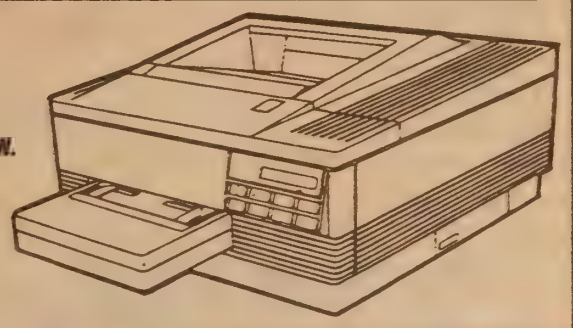

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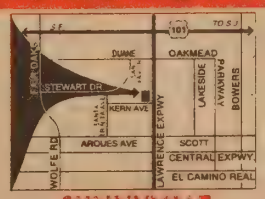

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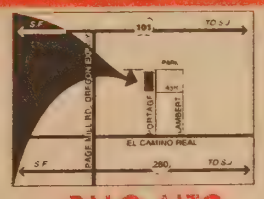

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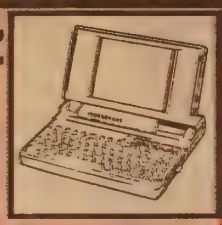

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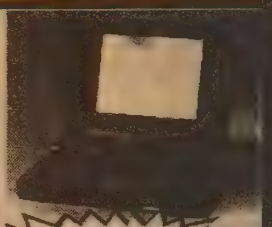

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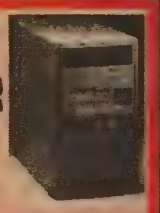

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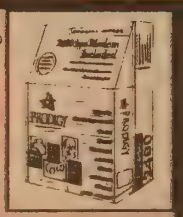

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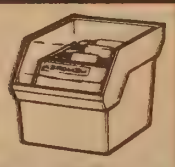

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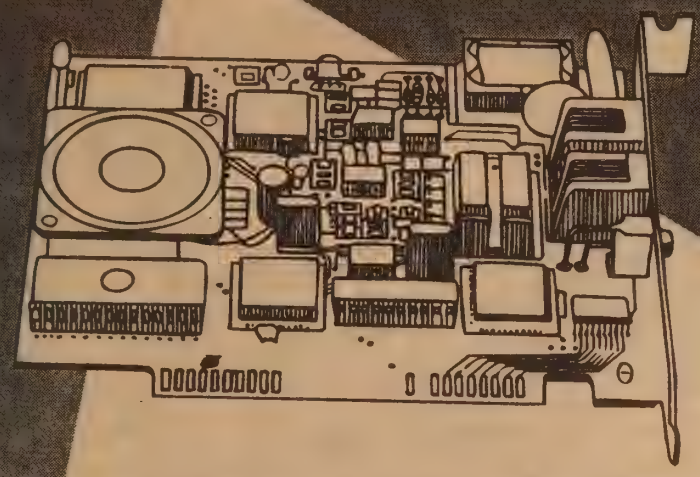

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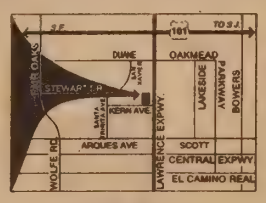

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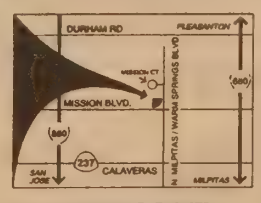

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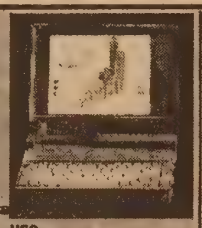

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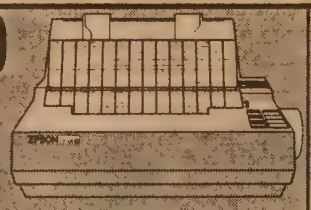

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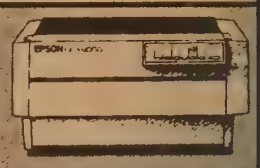

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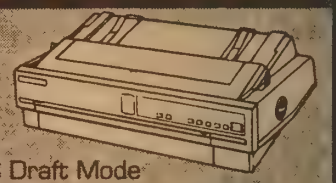

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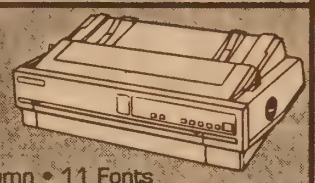

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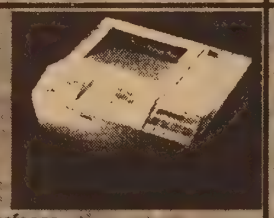

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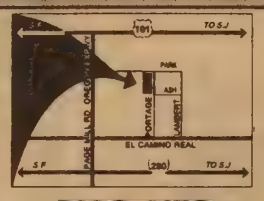

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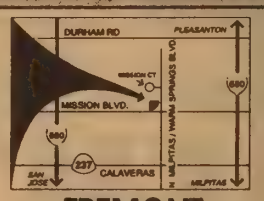

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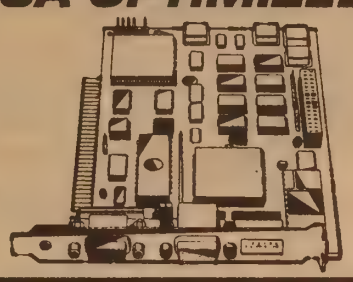

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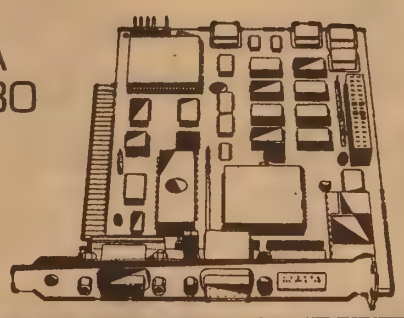

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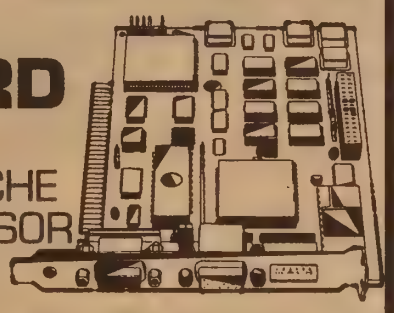

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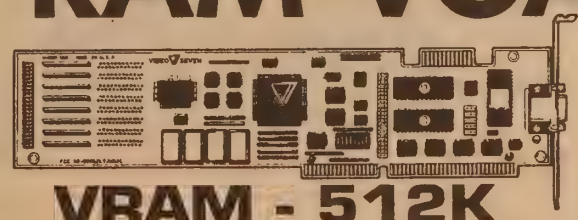

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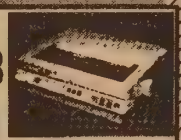

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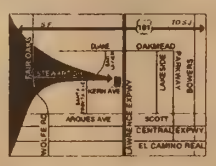

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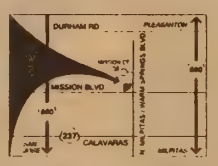

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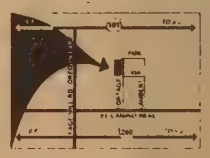

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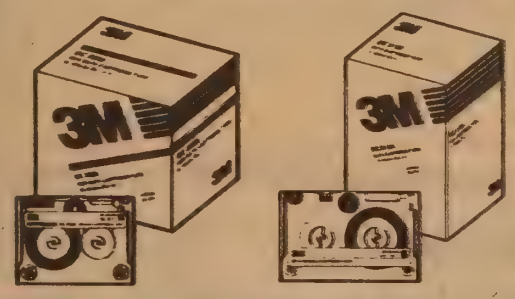

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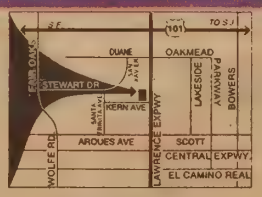

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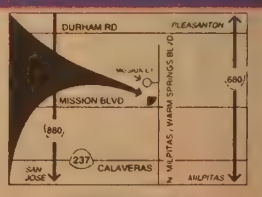

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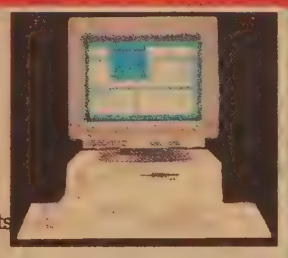

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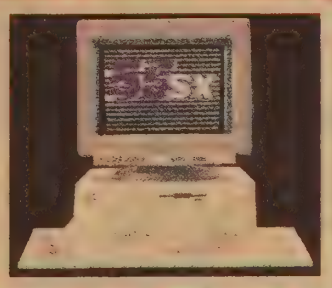

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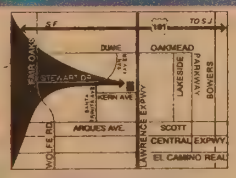

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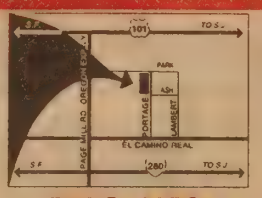

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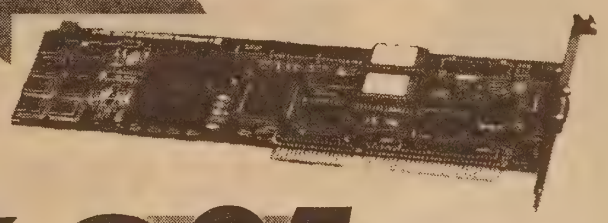

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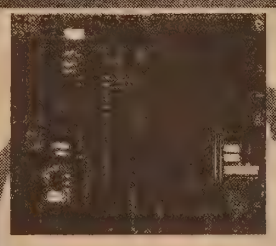

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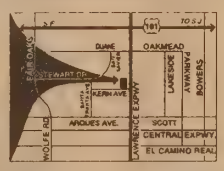

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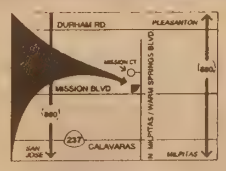

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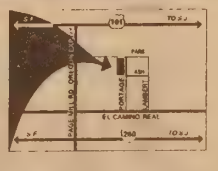

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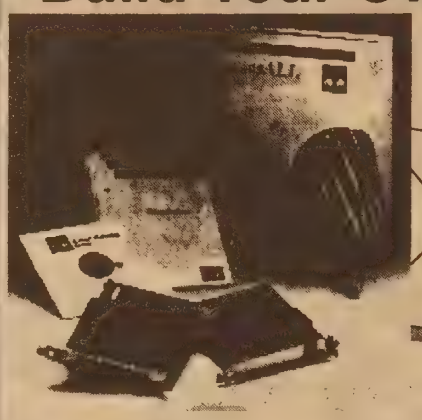

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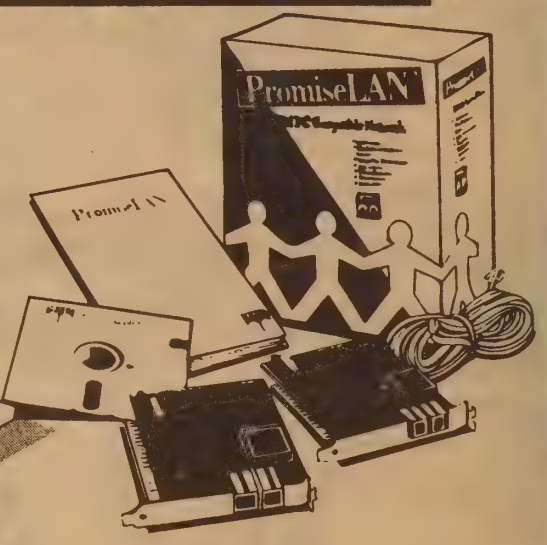

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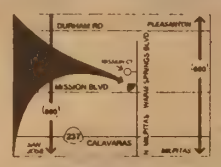

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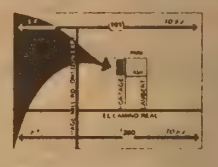

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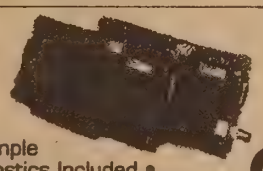

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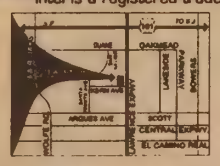

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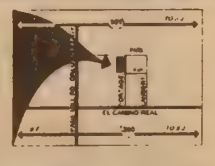

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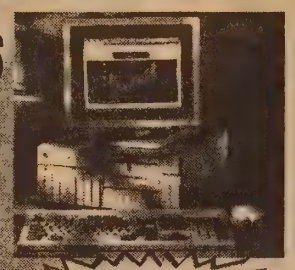

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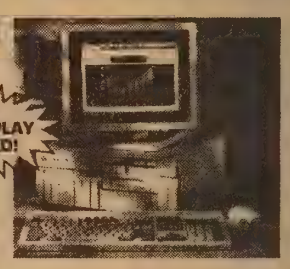

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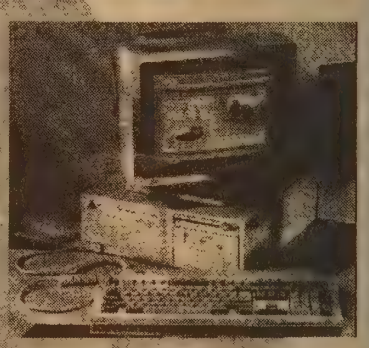

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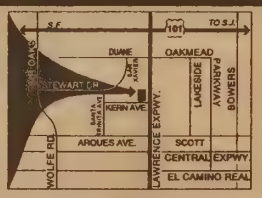

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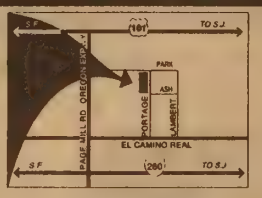

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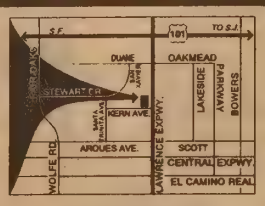

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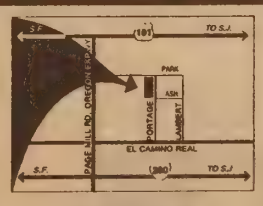

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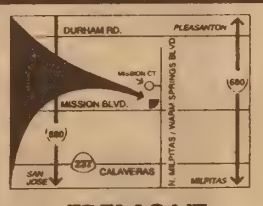

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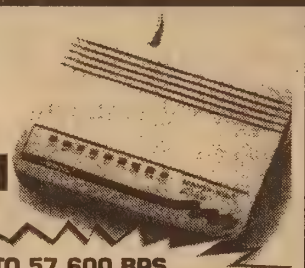

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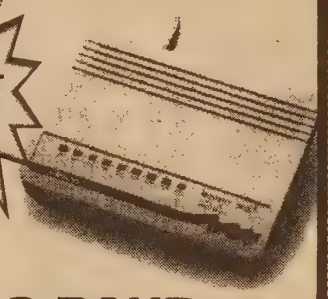

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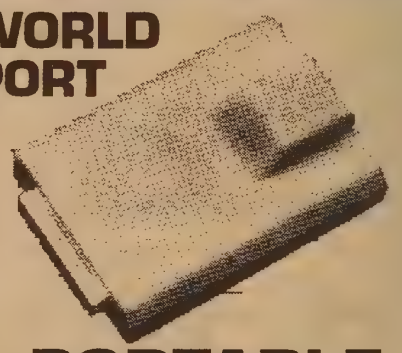

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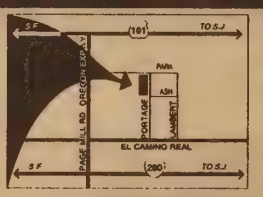

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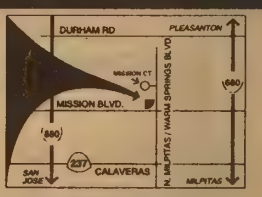

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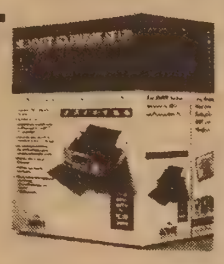

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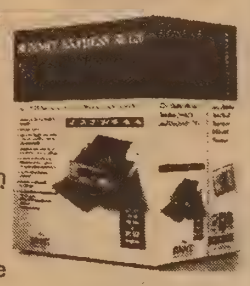

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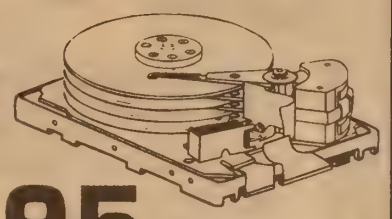

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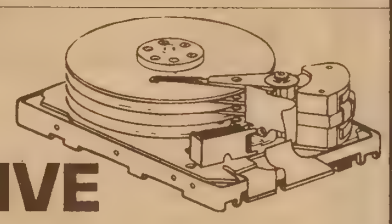

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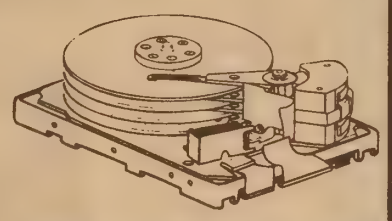

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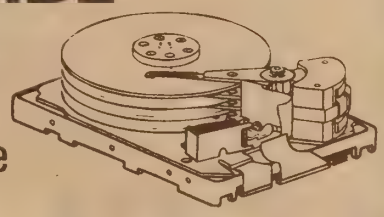

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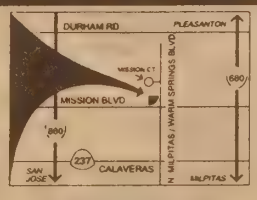

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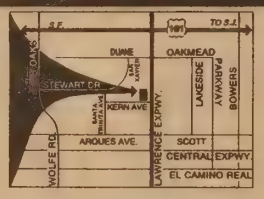

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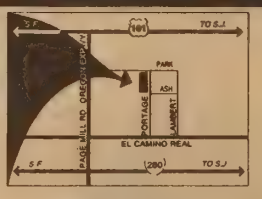

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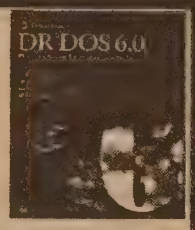

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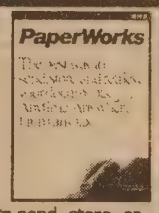

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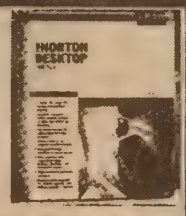

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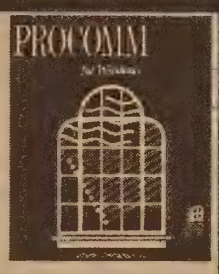

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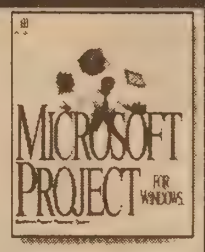

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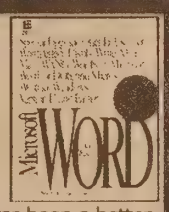

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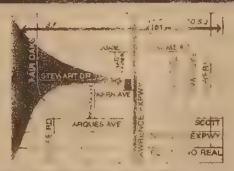

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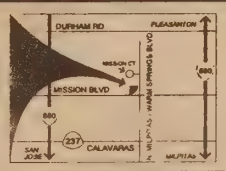

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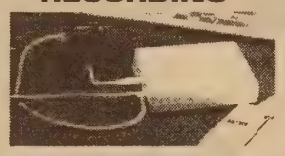

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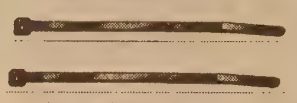

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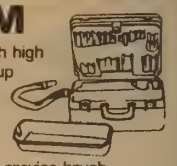

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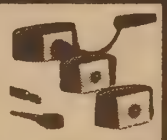

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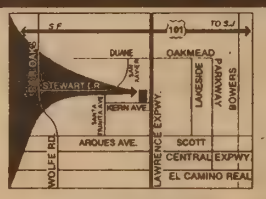

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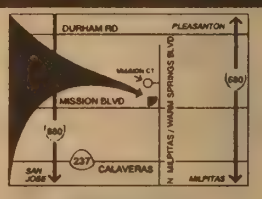

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IBM COMPATIBLES 1MEG 80NS DIPS
#1444003
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60NS #1477485
70NS #1601907
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IBM COMPATIBLES 1MEG X 9-80NS SIMM
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IBM COMPATIBLES 1MEG X 9-70NS SIMM
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$129.99

IBM COMPATIBLES 4MEG X 9-70NS SIMM
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T2000SX #1700217
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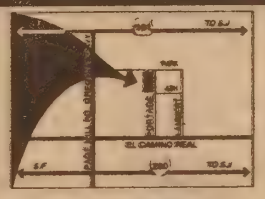

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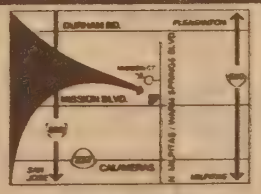

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FLUKE DIGITAL MULTIMETERS

FLUKE 97 SCOPEMETER™

Hand-held instrument that teams a 50MHz 25 mega-samples per second, dual channel digital storage oscilloscope with a feature-packed 3000-count digital multimeter. All in a rugged, sealed industrial package with battery operation that you can take anywhere you go.

$1795

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FLUKE 95 SCOPEMETER™

50MHz Scope
& Multimeter.
LED Display Waveform
Memories & Average
Min/Max Mode, Plus more

$1495

#1625273

FLUKE 93 SCOPEMETER™

50MHz Scope
& Multimeter.
LED Display Frequency,
True RMS Volts,
Smoothing, Change Alert,
Touch hold, Plus more

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#1625251

FLUKE 87 DIGITAL MULTIMETER

0.1% Basic dc Accuracy • 20kHz acV
High resolution Analog pointer
True RMS ac • 1ms PEAK MIN MAX
4 1/2 digit mode • Back lit display
Three year warranty

VOLTS, OHMS, DIODE TEST, AUDIBLE CONTINUITY, FREQUENCY AND DUTY CYCLE CAPACITANCE, TOUCH HOLD, RELATIVE PROTECTION MODES, HOLSTER WITH FLEX STAND

$298.99

#1440238

FLUKE 85 DIGITAL MULTIMETER

0.1% Basic dc Accuracy
20kHz acV
Analog bar graph and zoom
Three year warranty

VOLTS, OHMS, DIODE TEST, AUDIBLE CONTINUITY, FREQUENCY AND DUTY CYCLE CAPACITANCE, TOUCH HOLD, RELATIVE PROTECTION MODES, HOLSTER WITH FLEX STAND

$254.99

#1440216

FLUKE 83 DIGITAL MULTIMETER

0.3% Basic Accuracy
5kHz acV
Analog bar graph and zoom
Three year warranty

VOLTS, OHMS, DIODE TEST, AUDIBLE CONTINUITY, FREQUENCY AND DUTY CYCLE CAPACITANCE, TOUCH HOLD, RELATIVE PROTECTION MODES, HOLSTER WITH FLEX STAND

$214.99

#1440227

FLUKE 77 SERIES II DIGITAL MULTIMETER

3200 COUNT DIGITAL DISPLAY
31 SEGMENT ANALOG BAR GRAPH
0.3% BASIC DC VOLTS ACCURACY
2.0% BASIC AC VOLTS ACCURACY
1.5% BASIC DC VOLTS CURRENT ACCURACY (32mA TO 10A)
0.5% BASIC RESISTANCE ACCURACY • HOLSTER/FLEX-STAND
2000 HOUR BATTERY LIFE (ALKALINE) • AUTOMATIC TOUCH HOLD • DIODE TEST
AUDIBLE CONTINUITY BEEPER • AUTORANGING WITH MANUAL RANGING
SLEEP MODE WITH HARD POINTS • 3 YEAR WARRANTY

$164.99

#1567483

FLUKE 75 SERIES II DIGITAL MULTIMETER

3200 COUNT DIGITAL DISPLAY
31 SEGMENT ANALOG BAR GRAPH
0.5% BASIC DC VOLTS ACCURACY
2.0% BASIC AC VOLTS ACCURACY
1.5% BASIC DC VOLTS CURRENT ACCURACY (32mA TO 10A)
0.7% BASIC RESISTANCE ACCURACY • HOLSTER/FLEX-STAND
2000 HOUR BATTERY LIFE (ALKALINE) • DIODE TEST • TL70 TEST LEADS
AUDIBLE CONTINUITY BEEPER • AUTORANGING WITH MANUAL RANGING
SLEEP MODE • 3 YEAR WARRANTY

$138.99

#1567472

FLUKE 73 SERIES II DIGITAL MULTIMETER

3200 COUNT DIGITAL DISPLAY
31 SEGMENT ANALOG BAR GRAPH
0.7% BASIC DC VOLTS ACCURACY
3.0% BASIC AC VOLTS ACCURACY
2.0% BASIC DC VOLTS CURRENT ACCURACY (32mA TO 10A)
1.0% BASIC RESISTANCE ACCURACY • HOLSTER/FLEX-STAND
2000 HOUR BATTERY LIFE (ALKALINE) • DIODE TEST • TL70 TEST LEADS
AUDIBLE CONTINUITY BEEPER • AUTORANGING WITH MANUAL RANGING
SLEEP MODE • 3 YEAR WARRANTY

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FLUKE 70 SERIES II DIGITAL MULTIMETER

DC VOLTS - .5 basic DC accuracy
AC VOLTS - .2% accuracy from
45Hz to1KHzOhms • Diode Test
Touch Hold Continuity Beeper • Sleep Mode
Improved TL 75 • Test Leads
200Hr. Battery Life • Three Year Warranty

$68.95

#1567494

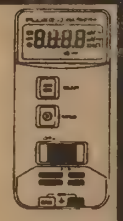
FLUKE 12 HANDHELD DIGITAL MULTIMETER

Min Max Recording With Relative Time Stamp
Capacitance: .001 to 9999uF
V Check™ • Continuity capture™
4000 Count Digital Display • Fast Continuity Beeper
0.9% Basic DC Volts Accuracy
1.9% Basic AC Volts Accuracy
0.9% Basic Ohms Accuracy
Diode Test • Sleep Mode • Two Year Waranty

$89.95

#1636059

FLUKE 10 HANDHELD DIGITAL MULTIMETER



4000 Count Digital Display
1.5% Basic DC Volts Accuracy
2.9% Basic AC Volts Accuracy
1.5% Basic Ohms Accuracy
Fast Continuity Beeper • Diode Test
Sleep Mode • Two Year Waranty

$69.95

#1636037

BK PRECISION 3 1/2 DIGIT COMPACT MULTI METER

Model 2703

- 19 Ranges
- 0.8% DCV
- Audible continuity
- Diode check
- 10 amp range

#1496963

Reg. Price $44.95

$39.99

BK PRECISION 20MHz DUAL-TRACE OSCILLOSCOPE

Dual or Single Trace Operation +1mV/DIV Sensitivity
20MHZ Response at a true 3DB
AUTO/NORM triggered sweep operation with
AC TVH TVV and the coupling • x10 magnifier
Bright, sharp rectangular CRT with P3331 phosphor
X-Y operation • Front panel trace rotation control
Tilt stand and soft handle • Selectable +/slope +
Built in calibration source • Compact low profile design
BK-2120 #155365

$379

CUI STACK OSCILLOSCOPE PROBES

CP209 #1699751	100MHz, x1, x10, Switchable	$46.99
CP901 #1699762	100MHz, x10, Ground Reference	$41.99
CP210 #1699717	60MHz, x1, x10, Switchable	$32.99
CP801 #1699728	60MHz, x10, Ground Reference	$26.99
CP250 #1699821	350MHz, x10, Ground Reference/Read-out	$89.99

OUR SELECTION CAN CROSS REFERENCE ALL BRANDS OF SCOPES BY SCOPE MODEL NUMBER OR SCOPE MODE PART NUMBER. LIKE TECTRONIX, FLUKE, HEWLETT PACKARD, KENWOOD, HITACHI, PANASONIC, LEADER, BECKMAN, GOLDSTAR, B & K, HAMEG, GOULD, KIUSUI, IWATSU & MORE

BK PRECISION 40 MHz DUAL-TRACE OSCILLOSCOPE

1 mV/div sensitivity • 20 calibrated sweeps
Video sync separators • Z axis input
x10 sweep magnification • Single sweep
V mode - displays
two signals unrelated in frequency
Channel 1 output

BK-1541
#1535194

$589

BK PRECISION 60 MHz DUAL-TRACE DUAL TIME BASE OSCILLOSCOPE

1 mV/div sensitivity • Sweep to 5 ns/div
22 calibrated ranges - main time base
19 calibrated ranges-delayed time base
V mode - displays two signals unrelated in frequency
Component Tester • Signal delay line
Z axis input
Single sweep

BK-2160
#1523797

$895

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SONY.

DATA DISCMAN ELECTRONIC BOOK PLAYER w/AUDIO

INCLUDES 3 FREE SOFTWARE TITLES

This hand held electronic book player incorporates CD-ROM technology to produce up to 100,000 pages of text or 32,000 graphic images on a single 3" CD! The Data Discman's video output capability will enable you to review data on any television with video input. As an added bonus, this unit also includes 3 pieces of software: Grollier's Consise Encyclopedia, Passport World Traveler w/Audio and Silvers Audiobook! With over 28 titles currently available and many more on the way, the library of the future can now fit in the palm of your hand for only...

$497

Model
DD-10EXB
#1699522

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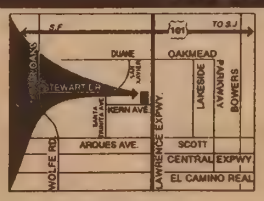

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YOU WON'T BE OUT OF TOUCH
WITH A CELLULAR PHONE FROM FRY'S ELECTRONICS

MOTOROLA

CELLULAR TOTE PHONE

This new addition to the Motorola family of cellular phones offers a 30# numeric memory, 3 Full watts of power and much more! An unbelievable value at only...

Authorized GTE Mobilnet Sales Representatives Mr Rescue™ service Ask for more details

$249

Model 2826A #1666944 — Limit 1 per customer No sales to dealers or resalers.

MOTOROLA

TRANSPORTABLE HANDHELD CELLULAR TELEPHONE

Motorola's most popular Hand Held Phone has all the right features! This compact unit will allow you to talk for up to 90 minutes, keep 30 numbers in memory, and much more!

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$329

Model 8000HX #1502549 — Limit 1 per customer No sales to dealers or resalers.

MITSUBISHI INTERNATIONAL CORPORATION

TRANSPORTABLE CELLULAR TELEPHONE

If it's features you want, the 1500 has it all! It keeps your most frequently dialed numbers and redials busy numbers automatically. For most phones, hands free requires an external kit with installation required. Not this phone! All you need is a microphone that we have in stock!

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$399

Model 1500TPK #1591682 — Limit 1 per customer No sales to dealers or resalers.

Panasonic

HANDHELD CELLULAR PHONE

No matter where you are Panasonic makes sure that you can take the call! This unit has a 2 hour battery, 100 number memory, alphanumeric display and a whole lot more!

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$499

Model HP-600 #1562259 — Limit 1 per customer No sales to dealers or resalers.

SONY.

LIGHTWEIGHT TRANSPORTABLE CELLULAR TELEPHONE

Sony introduces a compact lightweight, full power cellular phone with Dual-NAM programming giving you two cellular line registrations. Special features like 100-number alphanumeric dialing, 24-digit LCD readout, on-hook dialing, and auto-redial help make your connections quick and simple. And the CM-P11 also provides important security functions like manual/auto lock function, user-changeable unlock codes, 5-level call restrictions, and secure memory locations for calling card dialling. Now only...

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$599

Model CM-P11K #1656826 — Limit 1 per customer No sales to dealers or resalers.

MOTOROLA

ALPHA MICRO-TAC CELLULAR PHONE

If it's small and lightweight that your looking for, this is the cellular phone for you! With it's 101 alpha numeric memory, a desktop rapid charger, 20 hour battery in standby, 8 hour battery in standby and carrying case, this cellular phone incorporates the latest in cellular phone technology at only...

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$799

Model DPCAC #1635988 — Limit 1 per customer No sales to dealers or resalers.

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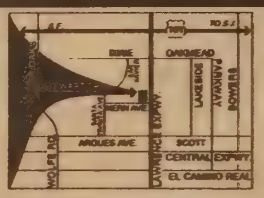

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TARGUS & BASIC NEEDS

NOTEPAC

TARGUS
A TRADITION OF EXCELLENCE

Notebook Carrying Case
14" x 11" x 2.5" (Interior Dimensions)
13" x 9" x 2" (Pocket Dimensions)
Compatible with Powerbook and all popular Notebooks.

$39

#1693283

Foliopac 1 Deluxe NOTEBOOK COMPUTER CASE

TARGUS

The Foliopac 1 will accommodate all popular models of "Notebook" style computers and all related accessories. Individual compartments are provided for an A.C. adaptor, extra battery pack, disks, cables and miscellaneous items. Includes standard Targus quality components such as high-density foam padding, removable shoulder strap, self-healing nylon zippers and Zilicone treated Oxford nylon.

$79.99

#1533790

Foliopac 2 Deluxe NOTEBOOK COMPUTER CASE

TARGUS

The Foliopac 2 will accommodate all popular models of "Notebook" style computers and all related accessories. Individual compartments are provided for an A.C. adaptor, extra battery pack, disks, cables and miscellaneous items. Includes standard Targus quality components such as high-density foam padding, removable shoulder strap, self-healing nylon zippers and Zilicone treated Oxford nylon.

$89.99

#1533790

BUSINESS TRAVELER

TARGUS

The Business Traveler's fully-lined and padded luggage section features see-through mesh accesory pouches, elastic retaining strap, and the padded computer/printer compartment features an adjustable divider, retaining straps and full-sized document pockets and a whole lot more. All for only...

$229.99

#1693308

NOTEBOOK CASE

TARGUS

This Notebook Premier offers three fully-lined document sections in addition to a padded computer compartment. The zip-down workstation section features disk pockets, pen and business cardholders, two pockets for miscellaneous items and even a pouch for your glasses!

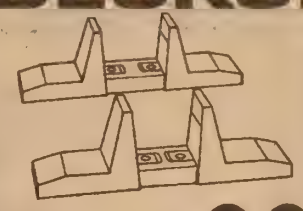
$159.99

#1693294

CLEAR THE DESKS!

BASIC NEEDS INC

VERTICAL CPU STAND



- Adjustable from 2 3/4 to 7 inches
- Wide base ensures stability

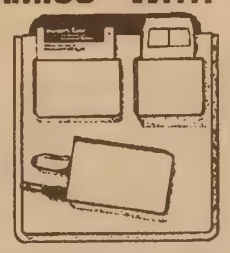
The vertical CPU stand, from Basic Needs, holds your CPU secure and improves stability with its two piece, wide-foot design. Our stand is made from high-impact plastic and comes in an attractive platinum design.
#1521315

$16.99

DEFY THE 2ND LAW OF DESK DYNAMICS* WITH

BASIC NEEDS INC

UTILITY PAC



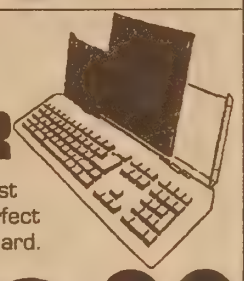
Save desktop space by storing your mouse, mouse pad, disks, paper, and pens conveniently on the side of your computer or any flat surface. The Basic needs Utility Pac™ is made from high-impact recycled plastic.

$10.99

*Desktop disorder leads to total chaos
#1584338

BASIC NEEDS INC

KEYBOARD COVER/COPYHOLDER



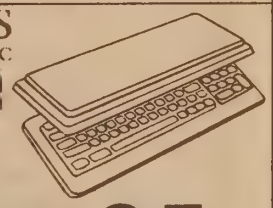
This transparent, plastic cover protects your keyboard against harmful dust and spills. When flipped up, it provides the perfect viewing angle as a copyholder. Attaches easily to your keyboard. (Size: W18"x D 61/2). For IBM PC, XT, Enhanced(101), AT, PS/2, and compatable keyboards.

$19.99

#1707317

BASIC NEEDS INC

HARDTOP KEYBOARD COVER



Hardtops, from Basic Needs, are hard plastic covers that protect your keyboard or printer against dust, major spills, or falling objects. These covers are available in an attractive platinum design and are placed easily over your keyboard or printer.
IBM
#1584316

$13.95

MAC VERSION EXTENDED KEYBOARD COVER #1584327 ..... **$13.95**

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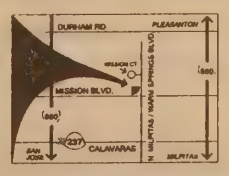

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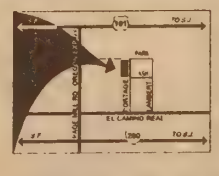

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PRODUCT SPOTLIGHT

New Products

LAPTOPS

INEX 3500 NOTEBOOK

Weighing only 5.7lbs., the INEX 3500 is designed to offer high-quality performance and ensure flexibility. Standard features include the AMD 80386SXL-25MHz processor, 4MB RAM, Quantum disk drive, and Chips and Technologies BIOS. Options include an internal data/fax modem, internal PS/2 mouse and keyboard ports, RAM memory expansion to 6MB or 8MB, numeric coprocessor, and hard disk drives up to 120MB. ($2195 with 4MB RAM and 40MB hard disk drive) Petronic International, Inc., 2300 C Zanker Rd., San Jose, CA 95131. (408)943-1717.

WYSE DECISIONMATE 486

The Wyse DecisionMate 486SLC is based on the Cyrix 25MHz Cx486SLC microprosessor. This chip combines a 486-compatible instruction set, a 1K closely-coupled cache to speed memory operations, and internal pipeline architecture to speed instruction execution. The system includes 4MB of RAM, expandable to 8MB, an 80MB or 120MB hard disk, and MS-DOS 5.0. The new notebook has been designed for Windows computing, word processing, sales/lead tracking, field service databases, and fax/modem communication to and from the office. LapLink software and data cables, a standard feature, connect the notebook to the serial port of a desktop computer for easy file transfer and copying. Other standard features include a leather carrying case, a security lock, and display enhancement software. (Model 80/4 with 4MB RAM and an 80MB hard disk is $2299) Wyse Technology, Inc., 3471 N. First St., San Jose, CA 95134-1803. (408)922-4300.

ACMA 386DX/33 NOTEBOOK

This Acma 33MHz, 386SX notebook comes standard with 4MB of RAM, expandable to 16MB, 32K cache, Award BIOS, LIM EMS 4.0 support, a 100MB hard disk drive, and 3.5" 1.44MB floppy drive. The enhanced multi-functional

Continued

PRODUCT UPDATES

- **CE Software** announced **QuickMail 2.5.1**, a maintenance release to QuickMail 2.5. CE Software, Inc., 1801 Industrial Circle, PO Box 65580, W. Des Moines, IA 50265. (512)224-1995. MCI Mail: CESOFTWARE. AppleLink: CESOFTWARE.
- **Cognos** announced **Impromptu 1.1**, a new version of its desktop SQL query tool for Microsoft Windows. Cognos, Inc., 67 S. Bedford St., Burlington, MA 01803-5164. (617)229-6600.
- **Compaq** introduced a nationwide **PC battery pack recycling program**, free to all their customers. To participate and receive a pre-addressed, postage-paid battery mailer, call: Compaq Computer Corp., 1-800-524-9859.
- **DayFlo Tracker** is shipping **Release 3.0** of its **DayFlo Tracker Personal Information Manager**. Current users can upgrade for $89. DayFlo Tracker Corp., 18021 J Sky Park Circle, Irvine, CA 92714. 1-800-367-5369.
- **Enable Software** released **Enable 4.5**, the upgrade to its DOS integrated software package. Enable Software, Inc., 313 Ushers Rd., Northway Ten Executive Park, Ballston Lake, NY 12019-1519. 1-800-766-7079.
- **Keller Software** introduced **Sideview III**. Current users can upgrade for $29.50. Keller Software., Inc., 3857 Birch St., Newport Beach, CA 92660-2660.
- **Radius** announced a **trade-up program** allowing end-users who purchased an original **Radius Rocket** or **Rocket 25i** accelerator board to upgrade to a **Rocket 33**. Radius, Inc., 1710 Fortune Dr., San Jose, CA 95131. (408)434-1011 or Radius's Automated Fax Information Service, 1-800-966-7360.
- **Time Arts** released **Lumena 3.6 Update**. The new version is faster than all previous releases and includes new advanced video features for professional users. Time Arts, Inc., 1425 Corp. Center Pkwy., Santa Rosa, CA 95407. (707)576-7722.
- **Trident Software** released **InfoTrak v4.0**, its software package designed to manage inventory from purchase order to financial tracking, cost allocation, and network configuration. Trident Software, Inc., 1001 Bridgeway, #101, Sausalito, CA 94965. (415)332-0188.
- **Triton Technologies** released **CO/Session 6.02** with much faster EGA/VGA graphics and improved remote Windows performance. Triton Technologies, Inc., 200 Middlesex Trunpike, Iselin, NJ 08830. 1-800-322-9440.
- **UMAX Technologies** is offering customers of its 24-bit color scanner a **free color display card** that upgrades 8-bit color displays to 24-bit true color images. UMAX Technologies, Inc., 3170 Coronado Dr., Santa Clara, CA 95054. 1-800-562-0311.
- **Zepher Development** introduced an **upgrade program** that lets users of any other vendor's 3270 communications software upgrade to Zepher's 3270 Passport for only $99 per PC workstation. Zepher Development Corp., Summit Tower, 11 Greenway Plaza, Suite 1610, Houston, TX 77046. 1-800-966-3270.

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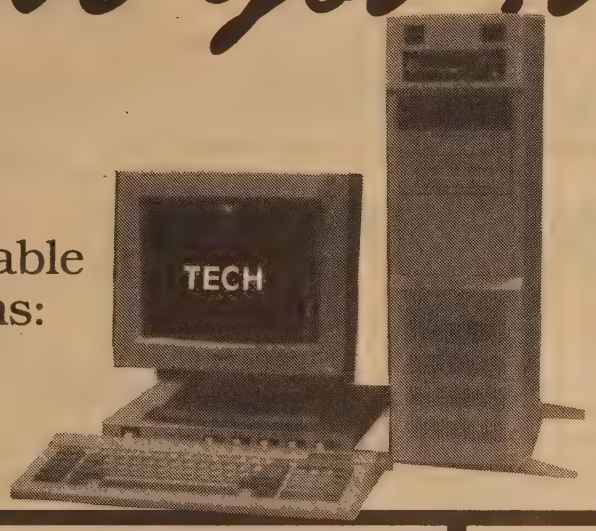

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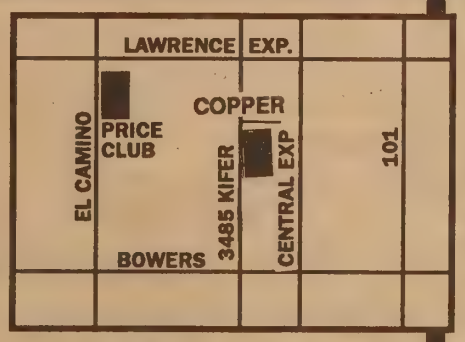

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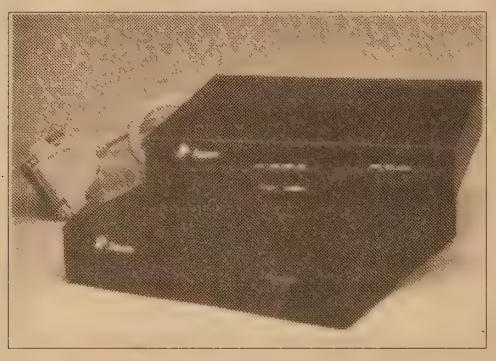
keyboard has a special Fn key for extended functions, and an integrated numeric keypad. The supertwist CCFT backlit LCD display is VGA. EGA, CGA, MGA, and Hercules compatible. An optional docking station lets you plug in an external keyboard, printer, or floppy drive. The docking station has two serial ports, one parallel port, an external keyboard port, two internal 16-bit expansion slots for half-size cards, and a full range auto-switching AC adapter. With this station you leave all you peripherals plugged in, simply connecting the notebook to create a fully featured desktop unit. ($2999) Acma Computers, Inc., 48401 Warm Springs Blvd., Fremont, CA 94539. 1-800-456-1818.

ANCO ETHERNET ADAPTERS

Anco expanded its family of Ethernet LAN products with two notebook and laptop parallel port adapters. These adapters allow PC notebook and laptop computers to simultaneously access a local printer and communicate with a network. The E/Net 10Base-T and E/Net Coax parallel port adapters provide four adapters: a DB25 male connector for attachment to a laptop, a DB25 pass-through port for attachment to a local printer or other parallel-port peripheral, a DB15 port for Thinnet connection, and either a RJ45 or a BNC port for 10Base-T or 10Base-2 applications, respectively. E/Net adapters also feature proprietary optimized software drivers for NetWare compatibility, LEDs to monitor collision, and activity and link status for easy diagnostics. ($345) Anco Corp., 9477 Archibald Ave., Rancho Cucamonga, CA 91730. 1-800-545-2626.



GATEWAY 2000 NOMAD

The Nomad family of notebook computers includes a 25MHz 486DX, a 20MHz 486SX, and a 25MHz 386SX system. All will run for six hours or more with Gateway's Battery Pro power management and at least 2.5 hours without it, and they weigh less than 6lbs. The 425DXL, a 25MHz 486DX system, comes standard with a 120MB hard drive, 4MB of RAM, expandable to 20MB, and costs $3495. The 420SXL, a 20MHz 486SX system, is ideal for users who need to run Windows while on the road. It costs $2795 and comes with an 80MB hard drive and 4MB of RAM, expandable to 20MB. The $1995 Nomad 325SXL, a 25MHz 386SX system, has an 80MB hard drive, 2MB of RAM, expandable to 60MB, a 1.44MB floppy drive, VGA video with 256K of memory, DOS 5.0, Windows 3.1, and a pointing device. Gateway 2000, Inc., 610 Gateway Dr., N. Sioux City, SD 57049. 1-800-523-2000.

PC HARDWARE

GEMTEK PRINTSHARE ADAPTER

Using standard telephone modular cable, the GemTek PrintShare Adapters provide a flexible, easy-to-use, low-cost, and maintenance-free printer sharing solution. Each adapter has three identical I/O sockets for flexible linkage—connecting up to forty PCs to share printers in almost any configuration. As your office grows, simply

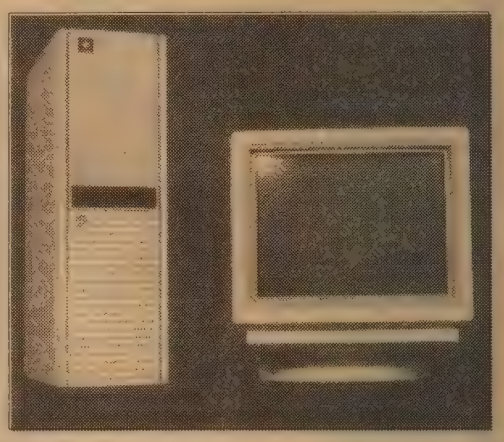
plug a PrintShare Adapter into your new equipment anywhere along your existing PrintShare network. The adapter works with most printers and systems, including DOS and Windows. PrintShare Adapters can coexist with LANs to reduce a file server's work load and improve overall network performance. (GT-100, $49 each adapter; GT-400, $79 each adapter) GemTek Technology, Inc., 10637 E. Rush St., S. El Monte, CA 91733. (818)401-3132.

DOMINO TELETEXT DECODER

The Teletext Decoder, a PC-compatible card, receives broadcast data services, such as stock quotes, news, sports, traffic, and weather, without any phone lines or subscription charges. It features a built-in television tuner with audio and video inputs that allows users to watch regular TV programs on their PC monitor by using a TV display card or connecting a TV monitor. With the Teletext Decoder installed, and connected to an ordinary TV antenna or a cable hook-up, users can receive Teletext broadcasts free of charge. Teletext consists of text and graphics information broadcast in selected markets via an unused portion of a TV station's signal known as the Vertical Blanking Interval. ($199, includes hardware card and software to capture, view, store, and recall pages of Teletext information) Domino Computer, Inc., 47853 Warm Springs Blvd., Fremont, CA 94539. (510)226-1800.

POLARIS 455I

The Polaris 455i Local Bus system is targeted at the CAD/CAM and engineering market where video performance and hard drive



throughput is critical to overall system performance. Based on the Intel 50MHz, 486DX processor, this system features a 32-bit local bus and a 32-bit video graphics accelerator that offers nearly twenty times the performance of conventional SVGA graphics technology. The standard system configuration includes 8MB of RAM, 1.2MB and 2.88MB floppy drives, a 200MB hard drive with SCSI interface, and an ultra-modern tower chassis. ($3345 with 14" non-interlaced monitor) Polaris Computers, Inc., 5702 Marsh Dr., Unit E, Pacheco, CA 94553. (510)689-2600.

AITECH PROPC/TV

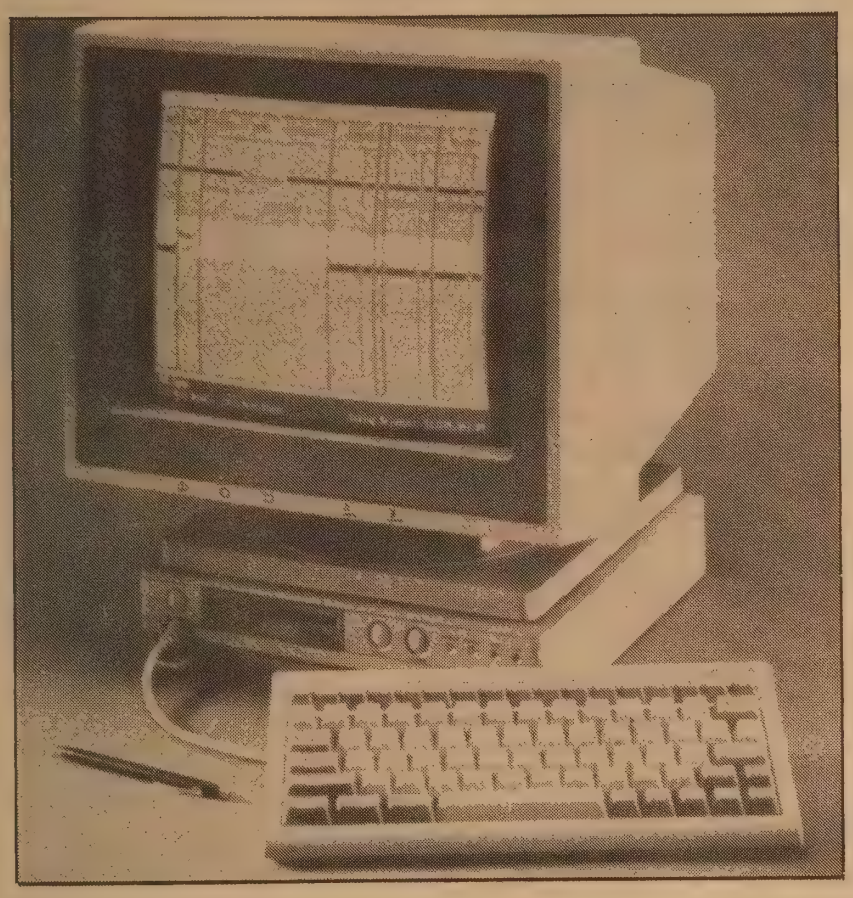
ProPC/TV is a pocket-size, external device used to covert VGA text and graphics into

NTSC format. It is designed to be carried with you, easily fitting into your briefcase or laptop carrying case. ProPC/TV displays computer text, graphics, and video games, and it allows you to show them on a TV screen. It can plug into a 15-pin VGA connector on your PC, laptop, or notebook computer just like a standard computer monitor. Then you may output the VGA signal to NTSC or S-Video devices like TVs, VCRs, and overhead projectors. ($299) Aitech International Corp., 830 Hillview Ct., Suite

Continued

SlimPro Booksize Computer

The **AddTech** group proudly presents our new **SlimPro Booksize Computer System**. The affordably priced SlimPro is a small footprint basic desktop system designed as an alternative to a Notebook computer. SlimPro targets the user who wants to use the same system at home and in the office without the need to transfer data. For those with limited space, the SlimPro line provides a low cost/high performance solution. If you want the portability of a Notebook computer at the price of a desktop system, call AddTech today !



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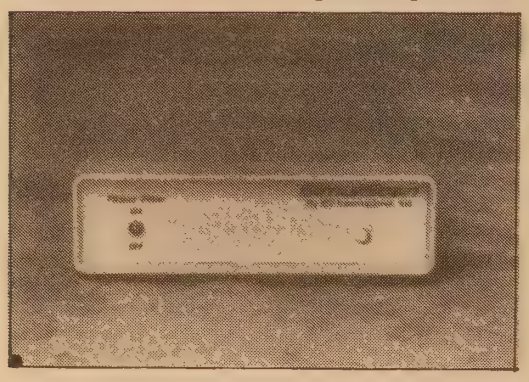
145, Milpitas, CA 95035. (408)946-3291.

IEV SIMULSCAN

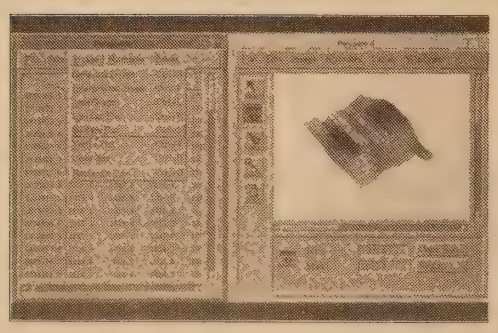
SimulScan is an external VGA graphics-to-video scan converter that provides simultaneous display capabilities and flicker-free video output from VGA 640 x 480 applications, including Windows. This valuable tool for demonstrations, recording, or portable presentations enables computer-generated images to be simultaneously displayed on a television, projector, or other video device, or to be recorded on a VCR. SimulScan requires no software. Simply unplug the VGA monitor, plug in SimulScan's cable, then plug the VGA monitor and television or VCR into SimulScan. ($495) IEV International Processing, Inc., 3030 S. Main St., Suite 300, Salt Lake City, UT 84115. (801)364-2030.



UNIX SOFTWARE

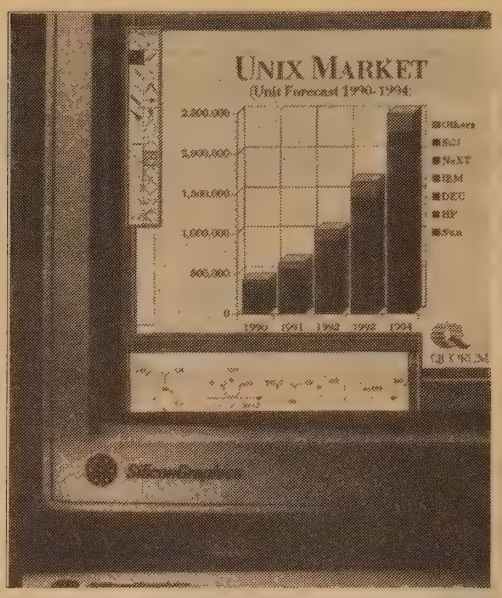
SPYGLASS TRANSFORM FOR DECSTATIONS

Spyglass Transform for DEC RISC/ULTRIX workstations uses the Motif interface to combine a streamlined Macintosh-style interface with Digital workstation performance. Users can instantly create color raster images, line graphs, surface plots, contour plots, and vector plots from 2-D data arrays, all with simple point-and-click operations and no programming. The program reads most data formats, including 2-D ASCII and ASCII X-Y column data, 2-D and 3-D data, and TIFF and FITS image files. The Notebook window feature offers a comprehensive set of trigonometric, statistical, and mathematical functions. ($895) Spyglass, Inc., 701 Devonshire Dr., Champaign, IL 61820. (217)355-6000.



QUORUM COMPATIBILITY ENGINE

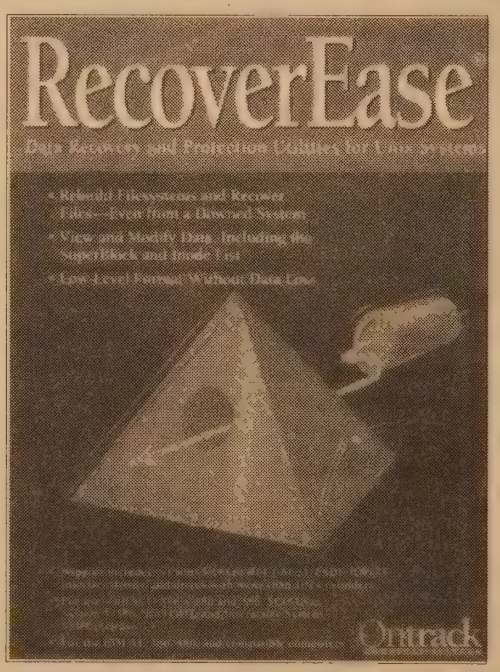
Quorum's Compatibility Engine is a new



software technology that enables Macintosh applications to run on a variety of RISC-based workstations at high speed with native graphical user interface support, and little or no modifications of the original program. Using the Compatibility Engine, software developers can continue to develop applications based on the Macintosh programming model while simultaneously gaining access to leading RISC-based platforms. Additionally, Quorum's technology brings an important advance in connectivity between computers with different operating systems and CPUs. At present, UNIX workstations can act as file servers for networks of Macintoshes, but UNIX users cannot manipulate data directly. With the Compatibility Engine users can view and edit Macintosh documents directly on their UNIX workstations. Quorum Software Systems, Inc., 4700 Bohannon Dr., #125, Menlo Park, CA 94025. (415)323-3111.

ONTRACK RECOVEREASE FOR UNIX

RecoverEase is a toolbox of data recovery and protection utilities engineered for UNIX systems. It is currently available for use with

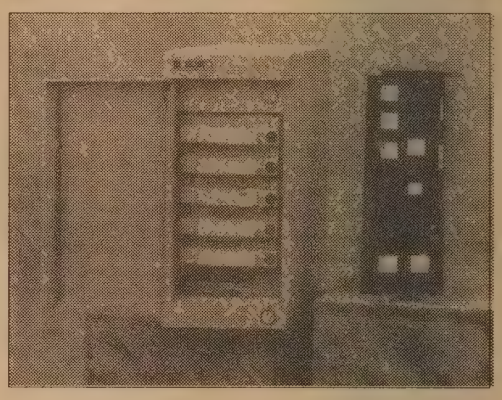


SCO Xenix, ACO UNIX, SCO ODT, and Interactive System V/386 Release 3.x. Included in the new RecoverEase utilities package is a collection of four expert programs: Scan, Diagnose-N-Analyze, Disk Look, and File Look. Because these utilities run under DOS, they can access data in system too corrupt to book under UNIX or Xenix. ($395) Ontrack Computer Systems, Inc., 6321 Bury Dr., Eden Praire, MN 55346. 1-800-872-2599.

UNIX HARDWARE

ADDA SCSI DISK ARRAY

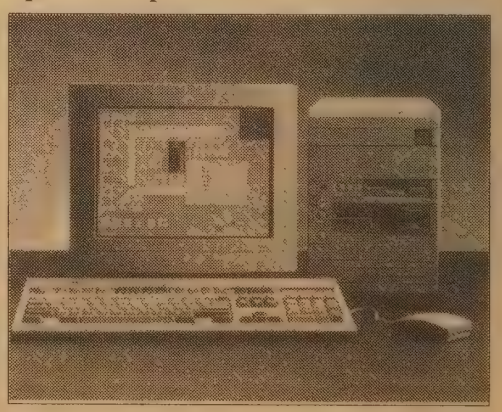
The ADS/1000 disk array subsystem uses easily removable SCSI disk drive bays for a secure, compact solution to mass memory



storage in UNIX environments. It comes with five disk docking stations that accept standard 3.5" SCSI 200MB storage devices. The docking stations permit the drives to be easily removed or added for a flexible, low-cost Redundant Arrays of Inexpensive Disks (RAID) architecture. Users can mount an additional tape or DAT drive for backup storage. (Base system with docking stations bays, $695) American Digital Data Associates, 434 Cloverleaf Dr., Unit A, Baldwin Park, CA 91706. (818)369-2332.

MOBIUS PROTEGE SERIES

Mobius has introduced two new models in its Protege Series of Intel-based, UNIX workstations—the P450icx and P450i. Both systems are based on a 50MHz, 486 processor, delivering more than 30MIPS of processing power with accelerated graphics and a color display. All models in the Protege Series are preconfigured with SunSoft ISC UNIX or SCO Open Desktop, and will be upward compatible with SunSoft Solaris 2.0



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- Bios & Video Shadowing
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MB 486DX50MHz w/64K Cache	$ 858
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14" IMP SVGA 1024X768 .28	$ 265
14" MM SVGA 1024X768 .39	$ 245
14" MM SVGA 1024X768 .28	$ 275
14" CLUB AT 1024X768 .28	$ 340
14" CLUB AT 1024X768 NI .28	$ 380
14" SONY 1304S	$ 540
14" SONY 1604S	$ 990
15" NEC 3FGX	$ 635
16" NEC 4FGX	$ 745
19" NEC 5FGX	$1338
21" NEC 6FGX	$2760

Video Cards

MGP Card	$ 15
SVGA Card w/512K	$ 40
Trident SVGA w/1024K	$ 68
Tsenglab SVGA w/1024k	$ 85
Diamond Speedstar Plus W/1MB	$ 125
Diamond Speedstar HiColor w/1MB	$ 145
Diamond Stealth VRam w/1MB	$ 245
Orchid Pro Ils HI Color w/1MB	$ 148
Orchid Pro Farenheit w/1MB	$ 218

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Modem 2400B Internal	$ 34
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Modem 2400 & Fax 9600 Int.	$ 69
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Logitec 1st Mouse	$ 37
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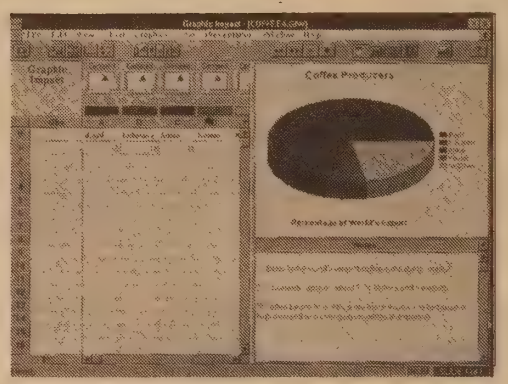
PRODUCT SPOTLIGHT

when it is available. The P450icx features an advanced 2-D graphics accelerator, a 231MB SCSI hard disk, 8MB RAM, a 17" Flatscreen display, built-in Ethernet interface, and a 1.44 floppy drive. The P450i is a reduced cost version of the P450icx. (P450icx, $9365; P450i, $6385) Mobius Computer Corp., 5635 W. Las Positas Blvd., Pleasanton, CA 94588-4037. 1-800-MOBIUS-1.

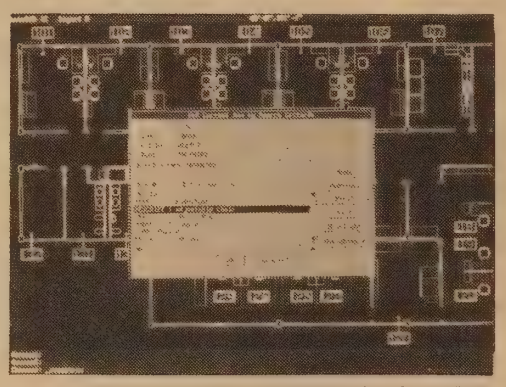
PC SOFTWARE

AUTODESK GRAPHIC IMPACT FOR WINDOWS



Graphic Impact, a new Windows-based software package from Autodesk, allows busy professionals to create high-quality business presentations almost immediately. When you are creating a presentation with Graphic Impact, everything you are doing is visible on the screen at all times. The package uses a split screen that allows you to input data or text into a worksheet on the left of the screen and see it integrated into a chart or text display in real time on the other side of the screen. A slide sorter displays thumbnail views of each presentation slide so you can conveniently add, delete, and rearrange slides right on the screen. ($149) Autodesk Retail Products, 11911 N. Creek Pkwy., S. Bothell, WA 98011. 1-800-228-3601.

AUTOCAD RELEASE 12



AutoCAD Release 12 speeds and simplifies the most frequently used CAD operations, increasing user productivity. In all, Release 12 has 174 enhancements, including improved plotting, an easier-to-use interface, support for SQL and PostScript data exchange, integrated rendering, enhanced drawing tools, and bi-directional compatibility with AutoCAD Release 11. Almost every major AutoCAD command can now be accessed by a dialogue box. Release 12 also allows users and developers to design their own dialogue boxes through AutoLISP and ADS. Release 12 is available for both DOS 386 and Sun SPARCstations. ($3750) Autodesk, Inc., 2320 Marinship Way, Sausalito, CA 94965. (415)332-2344.

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In database server test, the Axik surpassed Dell, the previous leader, by 5 percent in transactions per minute (TPM). The AXIK was 4 percent faster than ALR. In the previous review, we attributed part of Dell's efficiency to its three-bay drive array. The Axik excels in this capacity with only one drive.

The Axik ACE is a superior high-end file server with an extremely low price.

Info World 2/24/92

All Axik Ace Cache 486-50, 486DX2-50, 486DX-33, 486SX-25 Come With The Same High-Quality Features, Performance & Architecture, Backed By 8 Years of Motherboard Design, Manufacturing and System Integration Experience.

APPLICATIONS TESTS				INFO WORLD
486/50 PCs (test times in minutes:seconds)				
	AXIK ACE CACHE 486/WB-50	**ALR Powerpro 486/50**	**Compaq (1) Deskpro 486/50L**	**Dell (1) Powerline 450SE**
PRICE	**$4,399**	**$12,889**	**$12,999**	**$12,899**
File server tests				
Office test 24-station	01:57	01:59	01:53	01:52
Database file server(2)	1.70	1.64	0.71	1.61
Workstation tests				
CPU intensive	07:24	06:29	06:23	07:32
Disk intensive	21:36	17:53	15:59	23:48
Multitasking	01:23	01:03	01:02	01:08

1)Compaq Deskpro 486/50L and Dell Powerline 450SE Reviewed January 20, page 97

2) Transaction per minute for 24 stations, with a theoretical maximum of 6.0; higher indicate better performance

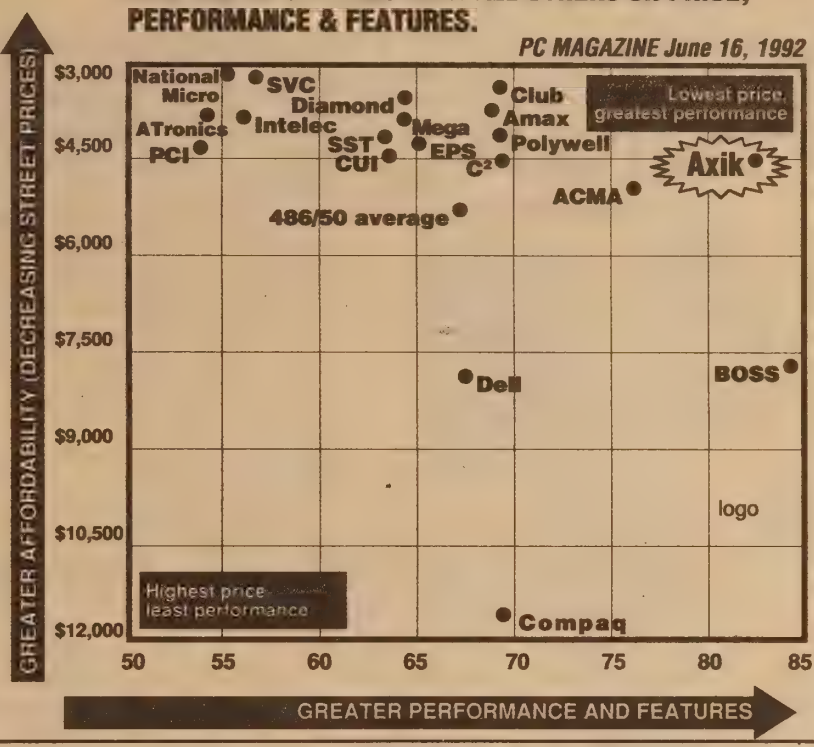
Reviewed By PC MAGAZINE *June 16, 1992*

INFO WORLD

BUYERS ASSURANCE SEAL

AXIK 486-50 SYSTEMS BEAT ALL OTHERS ON PRICE, PERFORMANCE & FEATURES.

PC MAGAZINE June 16, 1992



REVIEWED BY COMPUTER SHOPPER JULY 1992

"You Can Have It All with the *Ace 486/50*"

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"From the PC connoisseurs viewpoint the most interesting thing about the Axik is its motherboard. Axik makes its own boards, and the company's attention to detail shows"

"When you put it together, it's hard not to like the Ace Cache. While some buyers may be reluctant to go with a small startup company's computer, in this case, they should not be hesitant. This is a finely crafted machine made with quality parts. With the Ace Cache, you get great power, performance, and price. You really can have it all."

REVIEWED BY COMPUTER JULY 1992

OBG&H BEST BUY

"A GREAT BARGAIN"

"Axik Computers has gone to the trouble to build its own boards-and its home-grown ACE-motherboard-loaded tower system blows the competition out the door"

"RECORD TIMES"

"That's why we run our RealWorld Benchmark Tests twice on the Axik: we didn't believe the results the first time out. For the most part, the Axik's scores were among the lowest (that is, fastest) we've ever seen."

"Flat-out performance doesn't mean much if you're not getting value in other areas. The Axik 486WB/50 uses high-quality components like TEAC and Quantum drives, an Orchid VGA card, and a well-built roomy tower case. "All things considered the Axik at $2,849 isn't just a good deal: It's a fantastic buy!"

SYSTEM	MB +CPU	BASIC SYSTEM	BASIC + 40 MB HD +12"	BASIC + 40 MB HD +VGA	BASIC + 40 MB HD +SVGA	BASIC + 80 MB HD +SVGA	BASIC + 120 MB HD +SVGA	BASIC + 200 MB HD +SVGA
486-50C EISA	$1359	$1539	$1809	$1959	$1999	$2099	$2169	$2359
486DX2-50C EISA	1209	1389	1659	1809	1849	1949	2019	2109
486-33C EISA	1059	1239	1509	1659	1699	1799	1869	1959
486-50/256K	—	—	Best	Best	Best	Best	Best	Best
486DX2-50/64K	779	959	1229	1379	1419	1519	1589	1779
486-33/64K	559	739	1009	1159	1199	1299	1369	1559
486SX-25/64K	339	519	789	939	979	1039	1109	1339

BASIC SYSTEMS INCLUDE: M/B, CPU, 1 MB RAM, (512KB For 286) 1:1 2 FD/2 HD Controller, I/O (2S/P/G), 1.2 MB or 1.44 MB FD, Math Co-Processor Socket, Case + Power Supply, 101-Key Enhanced Keyboard.

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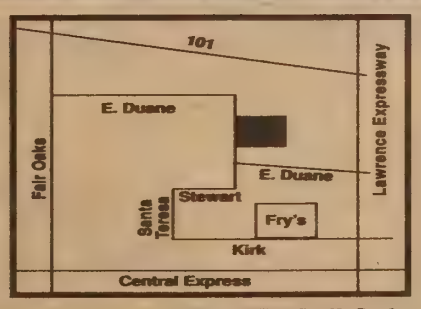

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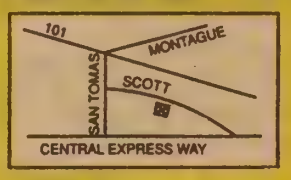

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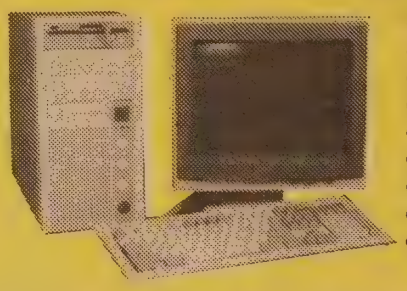

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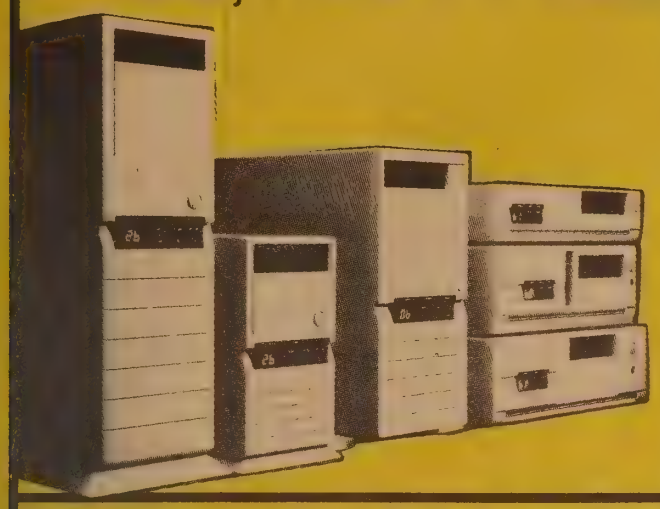

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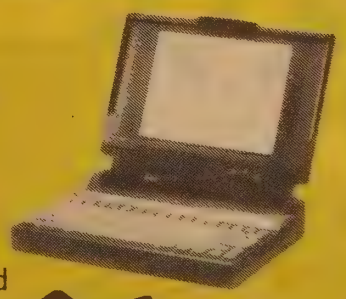

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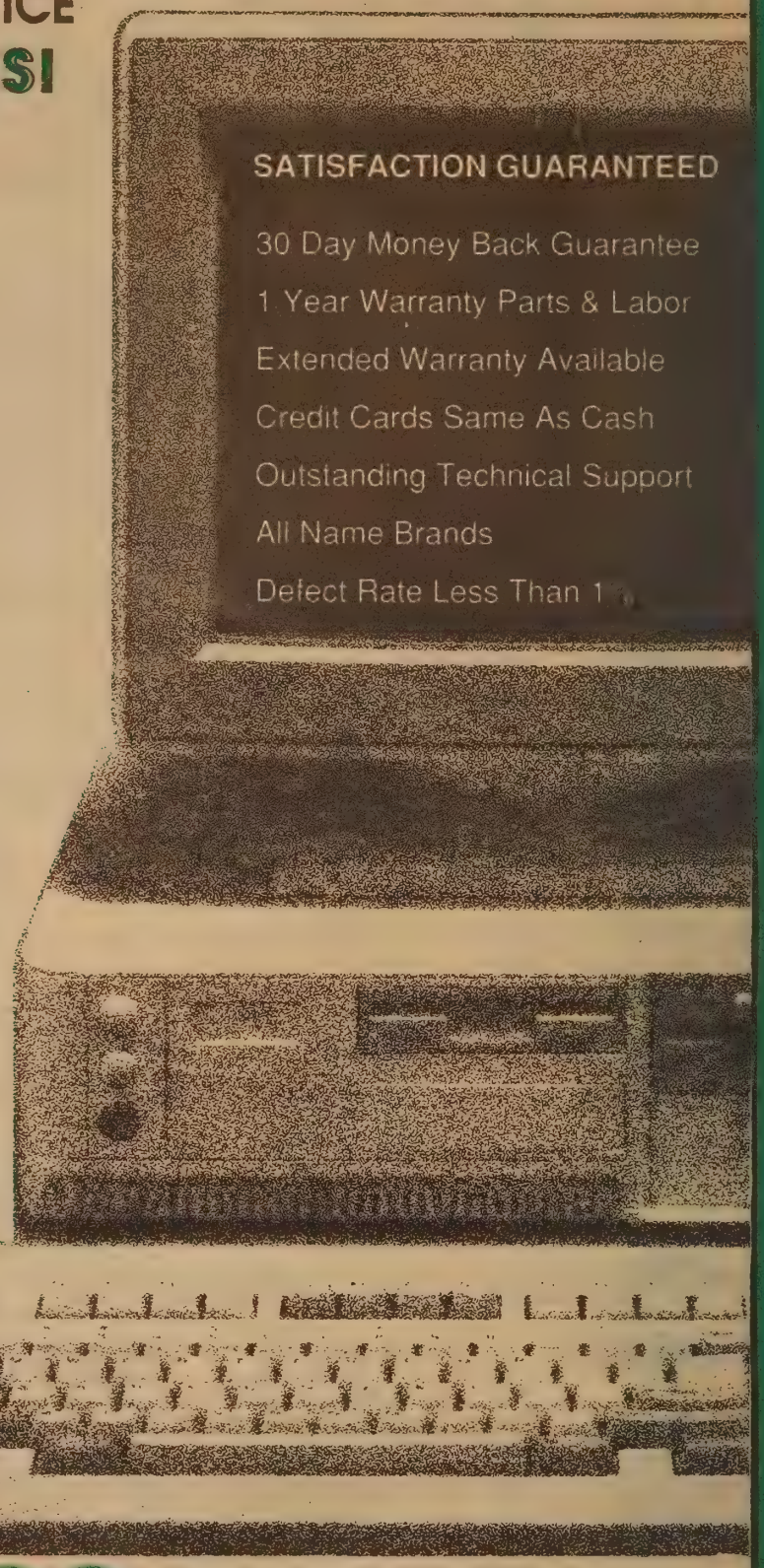

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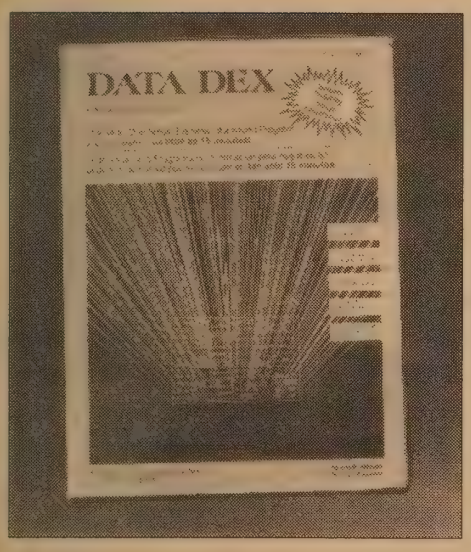
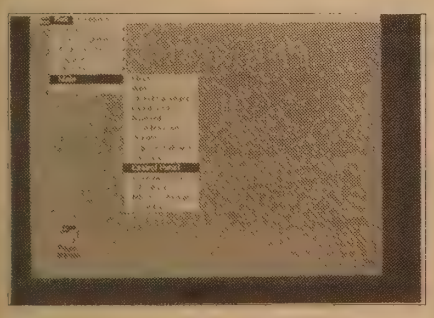


DATA DEX—ESPAÑOL

Data Dex—Español is a low cost, fully featured management software system in Spanish for Hispanic small businesses throughout the US, Mexico, South America, and Spain. The program links three databases for account control, simple accounting, word processing, and invoicing into one seamless package. It operates on IBM or compatible personal computers and MS-DOS 2.1 or higher. OptionWare has dedicated technical support staff at its Omaha headquarters to answer user questions in Spanish. ($199.95) OptionWare, Inc., 13306 A St., Suite 3, Omaha, NE 68144. 1-800-949-0056.

ABBOTT POWERSTRIP FOR WINDOWS 3.1

Powerstrip is a universal menu bar that makes Windows 3.1 easier. It comes with two great menus for program launching and file compression. The first, Run menu, saves you time by launching the Windows Program Manager from a single menu. The other, Compress menu, gives you more disk space with instant drag and drop file compression. Powerstrip adds power to your Windows environment without changing or replacing anything. ($79) Abbott Systems, Inc., 62 Mountain Rd., Pleasantville, NY 10570. 1-800-552-9157.



BACK-IT FOR WINDOWS

Back-It for Windows is a new hard disk backup utility designed for users of Windows and if the first Windows

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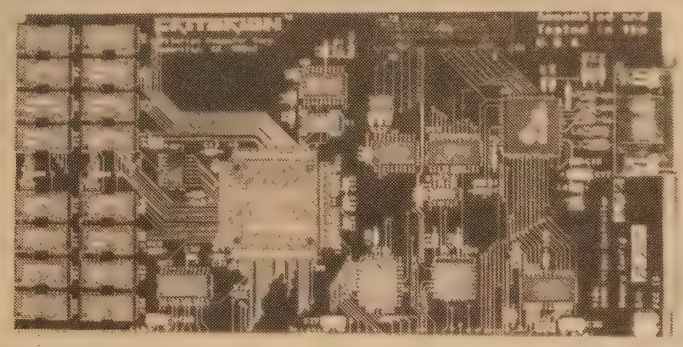

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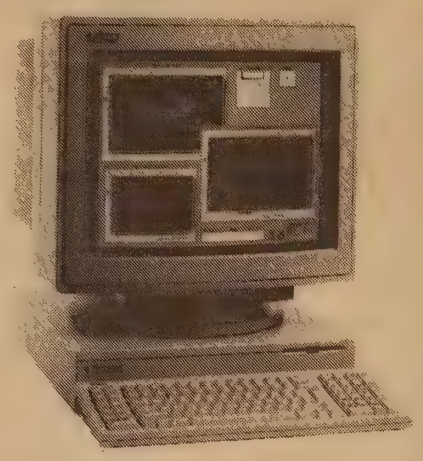

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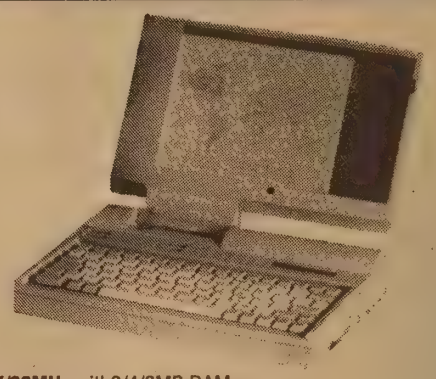

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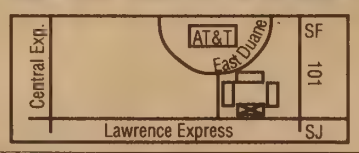

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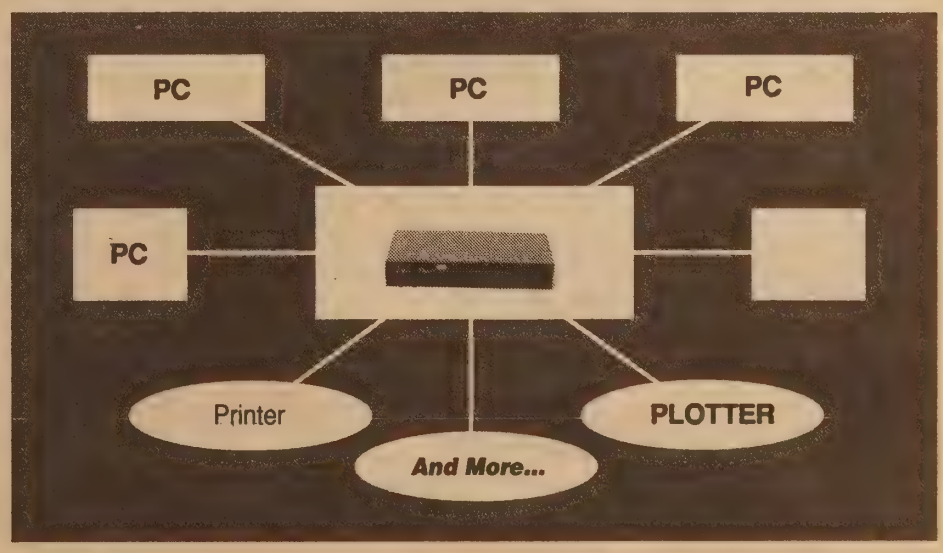

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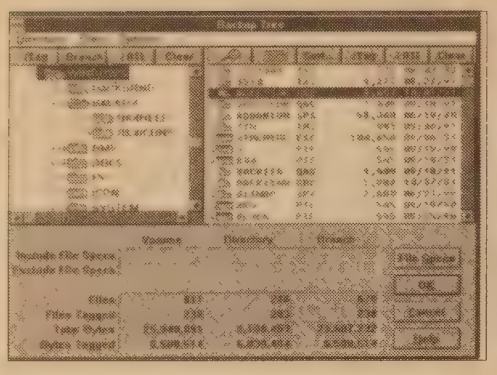
backup program to support a wide range of tape drives during background backups. Back-It for Windows comes with WinProtect, an efficient Windows anti-virus program that detects and eradicates over 1300 viruses. The program offers quick and easy tagging of individual files for backup or restoration as well as providing file viewing to allow users to view the contents of each file before selecting them for backup. Another unique capability is a Pause/Resume feature that allows users to stop in the middle of a backup to access the DOS prompt or perform other commands and continue the backup later. ($99.95) Gazelle Systems, Inc., 305 N. 500 W., Provo, UT 84601. (801)377-1288, 1-800-RUN-FAST.



MACINTOSH SOFTWARE

NETRENDERMAN

NetRenderMan brings network power to MacRenderMan by allowing users to transparently utilize remote CPUs for rendering. NetRenderMan allows MacRenderMan users to render their images on UNIX workstations that support Pixar's PhotoRealistic RenderMan, such as NeXT, Silicon Graphics IRIS or Indigo, Sun SPARC, DECstation, Hewlett-Packard 9000, and IBM RISCstation 6000. The rendering activities take place on the UNIX workstations and pixels are returned directly to the Mac monitor. All rendering features of MacRenderMan are available and the only difference the user will perceive is the vastly increased rendering speed. NetRenderMan includes an enhanced RenderMonitor, NetRenderMan software for the Mac, one UNIX license for PhotoRealistic RenderMan, and an installation guide. ($995) Pixar, Inc., 1001 W. Cutting, Richmond, CA 94804. (510)236-4000.

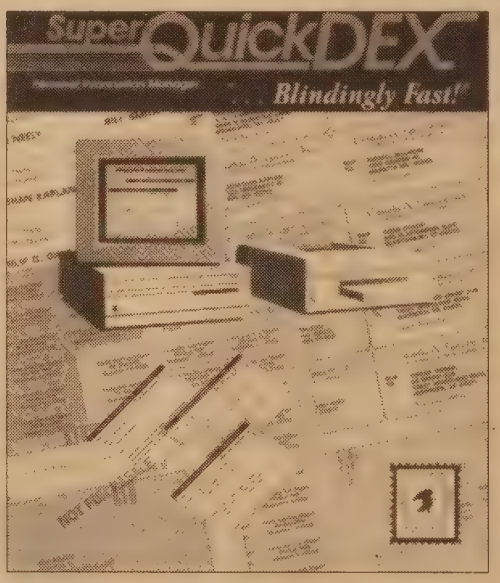
BERLITZ THINK & TALK FOR THE MACINTOSH

HyperGlot Software has begun shipping German and Italian versions for its Berlitz

Think & Talk language learning tools for the Macintosh. Based on the "Berlitz Method," Think & Talk features complete interactive control of audio CDs. They include fifty language lessons and an online, bilingual dictionary that can be brought up at the click of a button. Each package contains one data CD and the four to six audio CDs featuring the voices of native speakers. Users who have a Farallon MacRecorder or a Macintosh with a built-in microphone can record their own voice into the program and compare it to the teacher's voice. ($199) HyperGlot Software Co., PO Box 10746, 5108-D Kingston Pike, Knoxville, TN 37939-1746. (615)558-8270.

SUPER QUICKDEX

Super QuickDEX includes three utilities that make the classic QuickDEX a fast and efficient information/contact manager and a powerful printing, sorting, and merging package. The three utilities are QuickDEX II, QuickELOPE, and PrintDEX II. QuickDEX II is a free-form

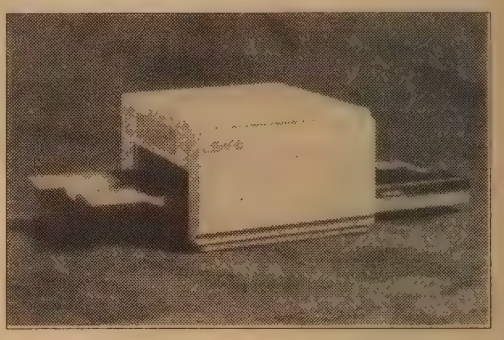


database desk accessory with an auto-dialer. QuickELOPE is a single-envelope addressing DA with type auto-sizing, centering, and printing. PrintDEX II, a 300K application, is also a new feature. It includes list merging with duplicate checking and a display of deleted cards; a powerful printing manager; and printing on multiple-address book forms. ($89.95. Upgrades are available from Casady & Greene for $45) Casady & Greene, Inc., 22734 Portola Dr., Salinas, CA 93908-1119. (408)484-9228.

PRINTERS

FUJITSU WORKSTATION PRINTPARTNER

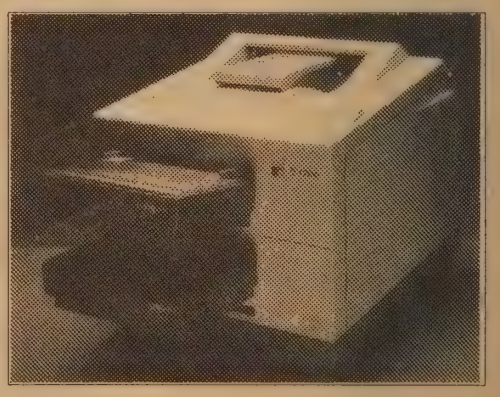
The VM2200-SRS Workstation PrintPartner is a 22ppm, 300dpi, large-format laser printing solution for the Sun workstation environment. The VM2200-SRS runs under Sun's NeWSprint 2.0, and is ideal for CAD/CAM, publishing, engineering, and other high-demand applications. The direct SCSI



interface, allowing high-speed data transfer rates, eliminates the need for an S-bus controller card on the workstation, a requirement for use of the slower Centronics interface. The VM2200-SRS comes standard with a 250-sheet bin. An optional second 250-sheet bin or 1000-sheet bin are also available. ($9995) Fujitsu Computer Products of America, Inc., 2904 Orchard Pkwy., San Jose, CA 95134. (408)432-6333.

QMS MULTI-NETWORK LASER PRINTER

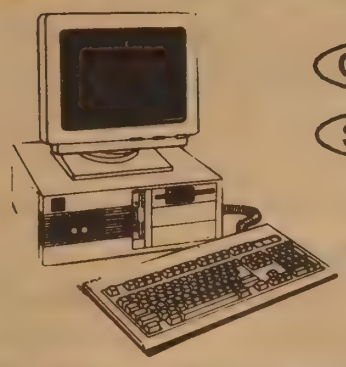
The QMS-PS 1700 laser printer is designed to serve up to twenty users in any computing environment. It includes standard RS-232C serial, Centronics parallel, and LocalTalk



interfaces. A fourth slot holds an optional Ethernet or Token Ring network interface card. QMS exclusive Crown technology supplies a feature set that includes RISC-based processing, selectable printer resolutions, multiple language and protocol support, and ESP printer language selection. The modular design of the QMS-PS 1700 allows the user to customize the printer to their needs, such as duplex printing, RAM upgrades, optional interfaces and printer languages, optional hard disks, and an optional system administrator's security

Continued

TURN KEY SYSTEMS



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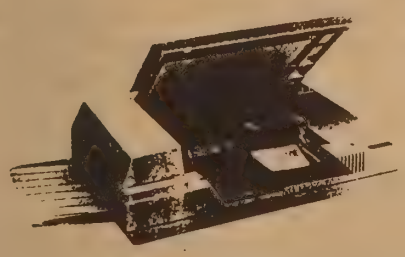

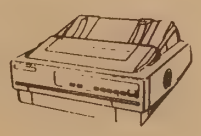

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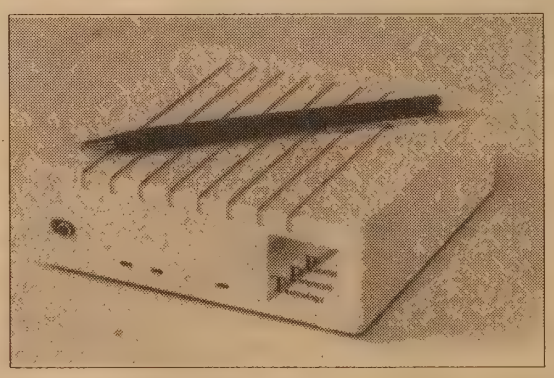

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Continued on page 186

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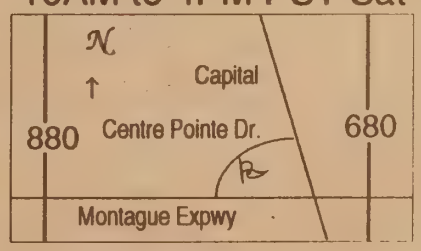

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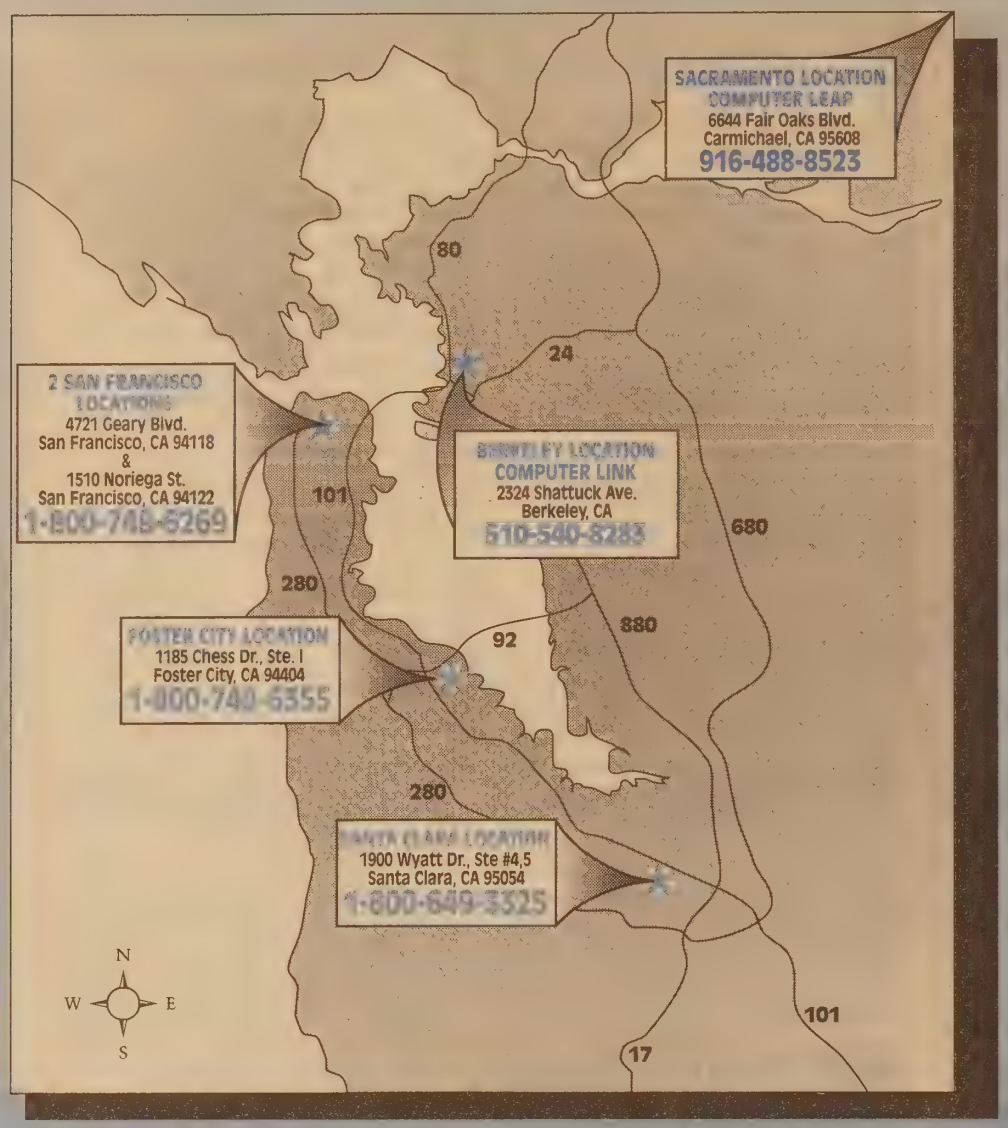

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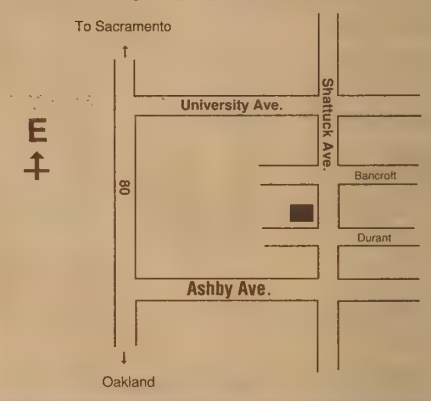

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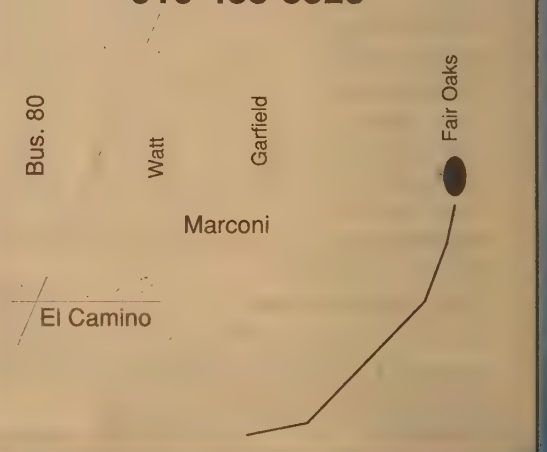

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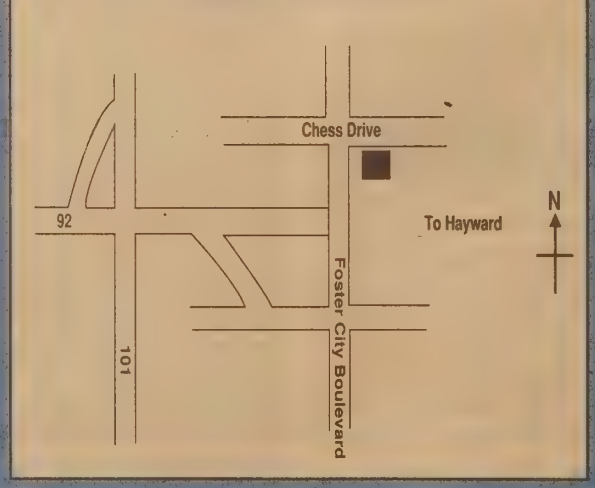

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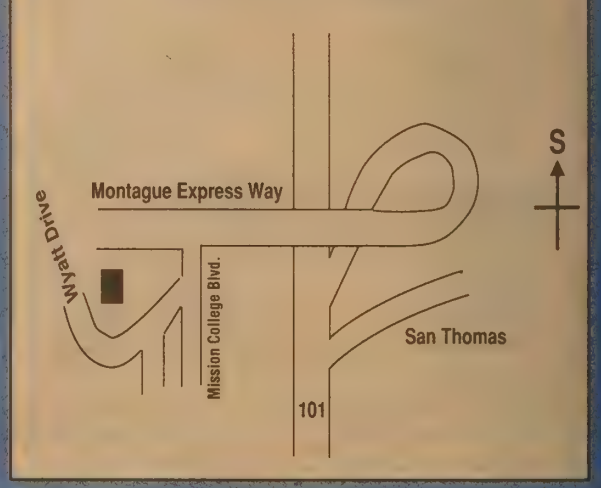

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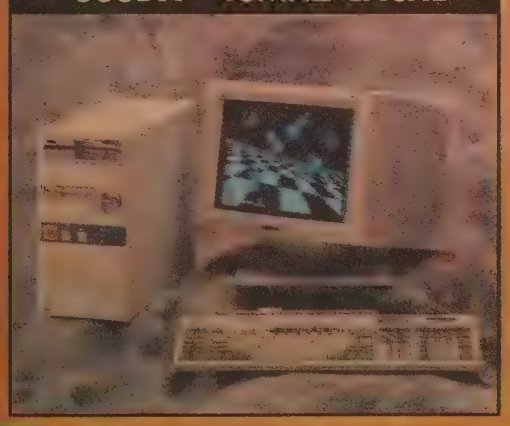

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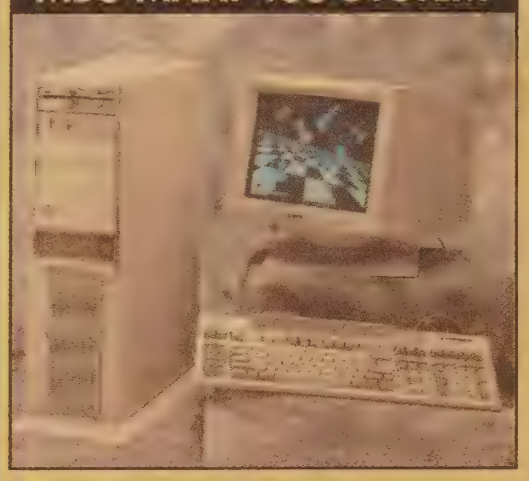

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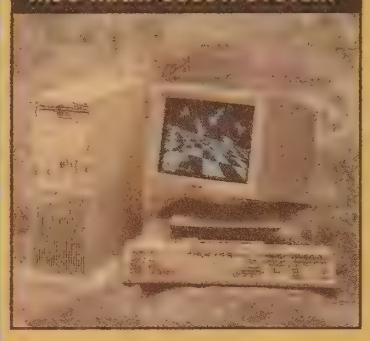

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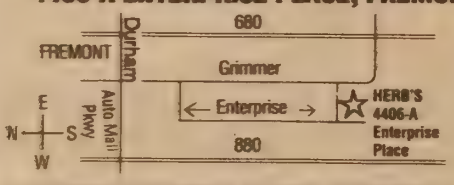

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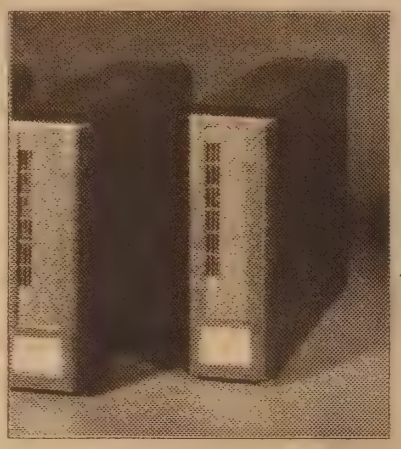
PRODUCT SPOTLIGHT

Continued from page 180

Parallel Peripherals Technology, Inc., 260 W. Arrow Highway, San Dimas, CA 91773. 1-800-222-7240.

SLIMFOX HARD DRIVES



The SlimFox Hard Drives include 60MB, 130MB, 210MB, and 525MB external hard drives. They connect to the computer directly through the parallel port, allowing users to use these drives with both portable and desktop computers. In addition, these drives all have parallel ports and printer pass-through capabilities, so users can use the SlimFox Hard Drives and a printer at the same time. The installation software is menu driven and designed to allow the user to easily and quickly get the SlimFox running. Tidal Technology, Inc., 1320 Harbor Bay Pkwy., Suite 200, Alameda, CA 94501. 1-800-5338-1199.

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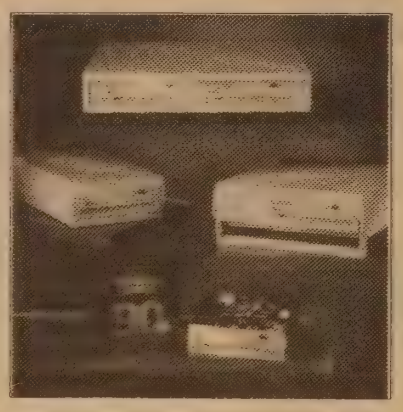

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Continued on page 195

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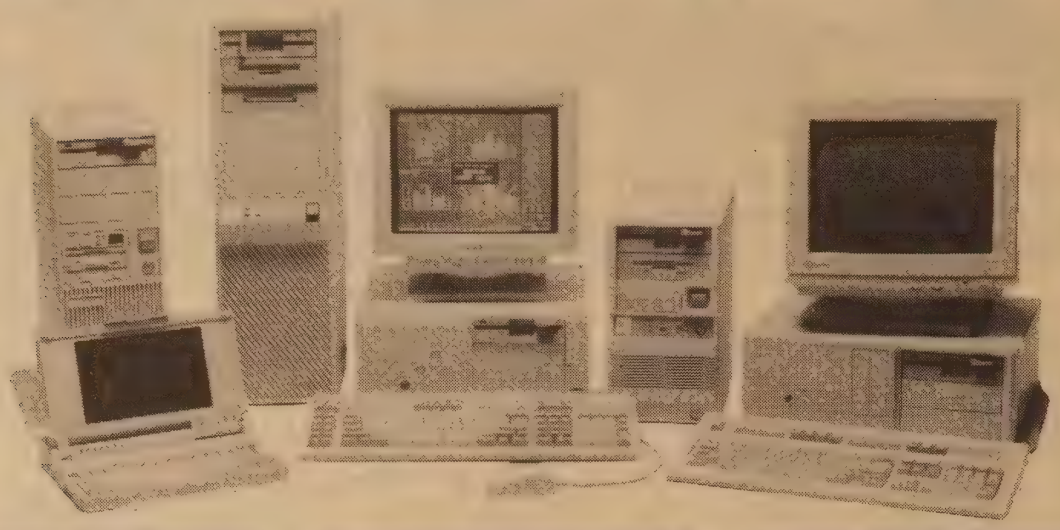

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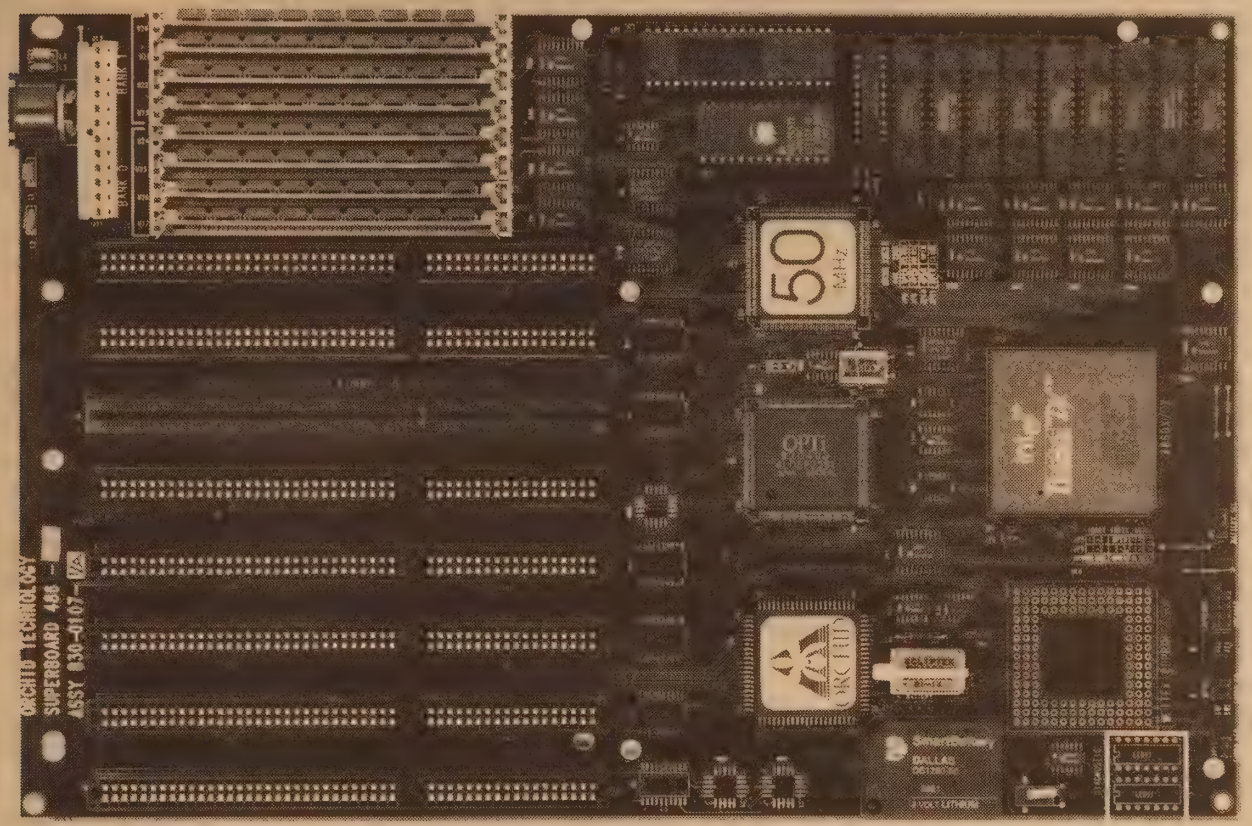

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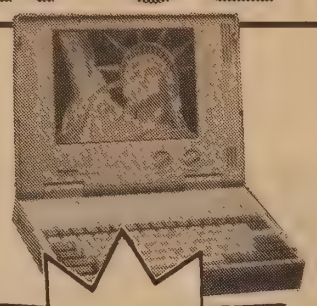

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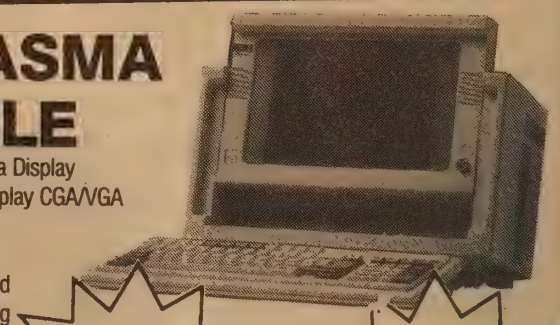

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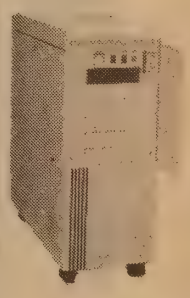
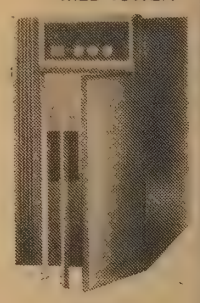


SE-AT-29

MED TOWER



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SYSTEM CONFIGURATIONS:

- QUALITY MOTHERBOARD
- 1 MB MEMORY (512K FOR 286 SYSTEM)
- 1.2 OR 1.44 MB FLOPPY DRIVES
- 1:1 FDD/HDD CONTROLLER
- MULTI I/O (2S/1P/1G)
- AT CASE w/200 WATT P.S.
- ENHANCED 101 KEYBOARD

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Enhanced 101 Click (baby)	$29
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Omnikey 101/102	69

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Big-Tower w/300W PS	445
Full Tower w/230W PS	115

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285W AT	55
300W AT	65
200W AT	39

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EPROM Programmer, EW-901B (1 Port)	$95
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EPROM Programmer, EW-704 (4 Ports)	160
EPROM Programmer, EW-708 (8 Ports)	235
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Universal Programmer & Tester Expro-60	525

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HH1050 44 MB MFM	$150
Conner 120 MB 19ms IDE	310
Conner 200MB 19ms IDE	545
Quantum 52 MB IDE	205
Quantum 120 MB IDE	315
Seagate 210 MB, 15ms IDE	575
Quantum 240 MB	640
Maxtor 130 MB 16ms IDE	315

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MFM 1:1 Controller 16 Bit	$30
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IDE Card	14

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Trident Super VGA 16 Bit, 1 MB	80
Nanao 16″ 9070U	945
Sony 1304HG 14″	585
Impression 14″ Super VGA	275
Impression 14″ Non-Interlace	315

LAN Network Interface Cards:

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AQUILA 4-in-1 16-Bit (TP Star/Bus & Coax Star/Bus) .. 125
SMC PC-130 8-Bit Coax 96
SMC PC600WS 16-Bit Coax 141
SMC PC600FS 16-Bit Coax 216
SMC EISA 32-Bit Coax Arcnet or TP Arcnet 743
THOMAS CONRAD 16-BIT Coax Star/Bus 240/270
TIARA LANCARD/A Hiz Bus PC/AT 146/206

Ethernet

AQUILA Coax 16-Bit or MC 155
3COM 3C503-16 ETHERLINK II 16-bit 199
3COM 3C503-16 ETHERLINK II 5 Pack 738
3COM 3C523B ETHERLINK/MC 290
3COM 3C523B ETHERLINK/MC 5 Pack 1,263
3COM 3C507 16-BIT ETHERLINK 299
3COM 3C507 5 Pack, (1 Doc/Drivers) 1,345
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INTEL ETHEREXPRESS 16 5 Pack (1 Doc/Drivers) 650
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WD TOKENCARD MASTER 4Mbps 16-Bit 438
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RACAL 10 Base-T transceiver (AUI to RJ45) 110
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3COM 3C503-16TP ETHERLINK II 16 5PK 825
3COM 3C507 ETHERLINK 16-bit TP 340
3COM 3C523B 10 Base-T MC 334
3COM 3C523B 10 Base-T MC 5 Pack 1,500
AQUILA 10 Base-T 8-Bit 135
AQUILA 10 Base-T 16-Bit 165
AQUILA 10 Base-T MC 160
INTEL ETHEREXPRESS 16 TP 145
INTEL ETHEREXPRESS 16 TP 5 Pack 675
THOMAS CONRAD 16-BIT w/ RJ45 279
SMC ETHERCARD PLUS 10T 10 Base-T 145
SMC ETHERCARD PLUS 10T 10 Base-T 6 Pack 719
SMC ETHERCARD ELITE 16T 10 Base-T 175
SMC ETHERCARD ELITE 16T 10 Base-T 6 Pack 809
SMC ETHERCARD ELITE 16 COMBO 217
SMC ETHERCARD ELITE 16 COMBO 6 Pack 1,000

External/Pocket Adapters

ACCTON RingPocket TR Adapter 546
AQUILA Pocket Ethernet Adapter BNC 225
AQUILA Pocket 10 Base-T Ethernet (RJ45) 225
AQUILA Pocket Arcnet Adapter 195
DLINK Pocket Ethernet Adapter BNC 250
DLINK Pocket 10 Base-T Adapter 250
XIRCOM Pocket Arcnet Adapter TP 247
XIRCOM Pocket Arcnet Adapter COAX 267
XIRCOM External Ethernet Adapter 413
XIRCOM External Token Ring Adapter 649
XIRCOM Pocket 16/4 Mbps TR Adapter 615
XIRCOM Pocket Ethernet II BNC 345
XIRCOM Pocket Ethernet Adapter 10 Base-T 378

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Hitachi CDR1750S Ext. CD-ROM w/interface 760
NEC CDR-84 Int. CD-ROM, 280ms w/interface 620
NEC CDR-84 Ext. CD-ROM, 280ms w/interface 712
SONY CDU-541 SCSI CD-ROM w/interface 575

SPECIALS

INTEL NETWORKING SOLUTIONS

TPE Managed Hubs:

EISA Hub Adapter (12 ports) 720
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Exp. Hub Board (12 more ports) 550
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Network Printing:

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Netport II for 2 Printers (Ethernet) 544

Network Faxes:

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SatisFAXtion Modem/200 339
FAXability Plus Windows Faxing 100
FAXability Plus/OCR Software 193

Network Management::

LANProtect Virus Protection 740
LANSight Support v.2.11 307
NetSight Sentry for Ethernet 1,549

Hubs, Concentrators & Repeaters

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DLINK 4-port Internal 10 Base-T Concentrator 325
HTI 8-port 10 Base-T Concentrator 425
AQUILA 12-port 10 Base-T Concentrator 575
EXOS/MICRODYNE 16 port 10 Base-T Concentrator 660
FASTLINK 4-Port Internal Arcnet Active Hub 99
FASTLINK 8-Port External Arcnet Active Hub 199
INTEL Internal EtherExpress TPE Hub/ISA 635
INTEL Harmonica for EtherExpress TPE Hub 65
IMC Dual Port Ethernet Repeater BNC/BNC 599
IMC Multi-Port Repeater Chassis 618
IMC BNC Repeater Card for IMC Multi-Port Repeater 250
IMC 10BT Repeater Card for IMC Multi-Port Repeater 150
NETWORTH Microhub 9-Port Concentrator 449
NETWORTH Microhub 8-Port + 1 BNC Conc. 469
THOMAS CONRAD Smart Hub 8 BNC Ports 499
THOMAS CONRAD Smart Hub 16 BNC Ports 719

Network Utilities

NOVELL NetWare Lite v1.0 89
cc:MAIL DOS Platform V4.0 223
cc:MAIL OS/2 Platform 377
cc:MAIL WINDOWS Platform 377
cc:MAIL MacIntosh Platform 377
cc:MAIL Lan Package + 10 USERS 253
cc:MAIL Lan Package + 25 USERS 622
cc:MAIL Lan Package + 100 USERS 2,395
CHEYENNE-MONITRIX Network Mgmt. 595
CHEYENNE Utils for NetWare 286/386 262
CHEYENNE ARCserve tape software VAP 792
CHEYENNE ARCserve NLM V4.0 (up to 250 users) 1,295
CHEYENNE ARCserve NLM V4.0 (up to 20 users) 810
CHEYENNE ARCserve VAP V4.0 (5 users) 218
CHEYENNE ARCserve VAP V4.0 (10 users) 511
CHEYENNE ARCserve VAP V4.0 (any users) 879
CHEYENNE ARCserve Solo 185
FRESH TECH Map Assist 226
FRESH TECH Printer Assist 175
DIRECT ACCESS Network 366
XTREE XTNET Network File Manager 305
ONTRACK NetUtils v3.0 (New Product) 216
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APC UPS Monitor Card for NetWare 80
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APC POWERCHUTE PLUS (VAP/NLM) 99
APC SMART-UPS 400 323
APC SMART-UPS 600 411
APC SMART-UPS 900 650
APC SMART-UPS 1250 844
ELGAR IPX1100SL (1000w) 539

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INTEL NET SATISFAXTION Network Fax Software 653
OPTUS FACSys NetWare Fax Server Software 552
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TALLGRASS FILESECURE 500i (500MB) 1,058
TALLGRASS FILESECURE 1000i (1 GB) 1,599
TALLGRASS FILESECURE 1300i (2.6 GB) 2,399
MOUNTAIN FS2100 2.2GB Ext. 8MM, SCSI 4,924

Server Based Kits

ARCHIVE INT. PYTHON 1.3GB DAT w/VAP 2,300
ARCHIVE EXT. PYTHON 1.3GB DAT w/VAP 2,511
EXABYTE INT 2.2 GB 8MM w/VAP 2,706
EXABYTE EXT. 2.2 GB 8MM w/VAP 2,919
ARCHIVE INT. PYTHON 1.3GB DAT w/NLM 2,895
ARCHIVE EXT. PYTHON 1.3GB DAT w/NLM 3,106
EXABYTE INT 2.2 GB 8MM w/NLM 3,301
EXABYTE EXT. 2.2 GB 8MM w/NLM 3,514

LANtastic Products

LANtastic AE-1/T 10 Base-T Adapter 136
LANtastic AE-2 Ethernet Starter Kit 535
LANtastic AE-3 Starter Kit 560
LANtastic AE-2 Ethernet Adapter 215
LANtastic AE-3 Combo Adapter 239
LANtastic 2Mbps Starter Kit 385
LANtastic/AI Adapter Independent(single node) 89
LANtastic Central Station 410
LANtastic Peer Hub 296
LANtastic for NetWare 305

Macintosh Products

Ethernet

3COM 3C543 ETHERLINK/NB 386
3COM 3C563 ETHERLINK/SE 321
ASANTE MC+IIE64 Coax/MAC II 222
ASANTE MC+IIET64 10 BaseT/MAC II 222
ASANTE EN/SC 10 BaseT for Powerbook 288

Cabling Supplies

RG58/RG62 or RJ-45 Rachet BNC Crimper 75
RG58 Ethernet BNC-Crimp (100 pak) 125
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RJ45 10 BaseT Connectors (100 pak) 40
AT&T 10Base-T Ethernet Cable (1000' min) 100
BELDEN PVC RG58 or RG62 Cable (1000' min) 175

Accessories

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CASTELLE JETPRESS BNC/10 Base-T 436
INTEL NETPORT II for Ethernet 544
INTEL NETPORT II for 10 Base-T 544
INTEL NETPORT II for Token Ring 775
MICROTEST CABLE SCANNER Kit 1,110
MICROTEST NEXT SCANNER Kit 2,553
INTEL 14.4EX v.32 Modem 525
SHIVA NET MODEM/E 9600 BNC 1,699
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Disk Sub-Systems for NetWare

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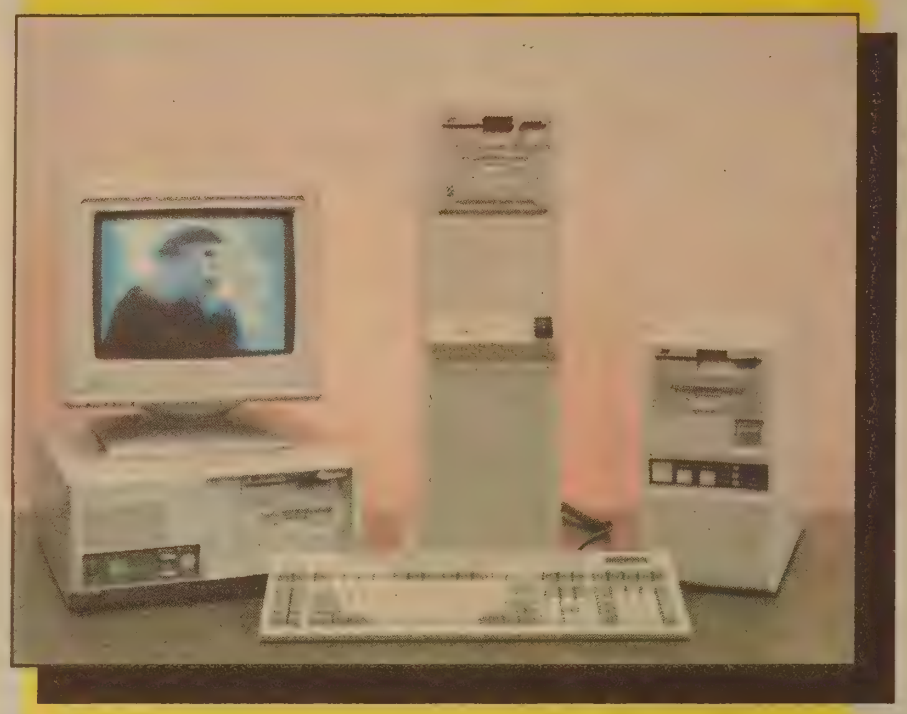

Basic System Configuration

Motherboard and CPU, 1 MB memory installed, 1:1 2HD/2FD controller, 1.2 MB or 1.44 MB Floppy Drive, Internal clock/ calendar, Mathematical coprocessor socket, 2 Serial/1 Parallel ports, Enhanced case with Power Supply and 101-key Enhanced Keyboard.

486-33C EISA w/64k cache	**$1299**
486-33C ISA w/64k cache	**$779**
386-40C w/64k cache	**$634**
386-33C w/64k cache	**$599**
386-25	**$499**

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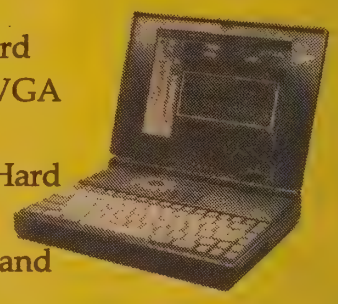
- MS DOS 5.0 w/Quick Basic
- Carrying Case

Introducing The Twinhead *SLIMNOTE*



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Diamond Stealth	add $179

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14" SVGA Viewsonic 6 1024x768	add $89
14" SVGA Sony CPD 304 1024x768	add $275
14" SVGA NEC 3FG	add $399
14" SVGA NEC 4FG 1024x768	add $499
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(Add $59 for 256K Cache)
(Add $399 for EISA board)

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- 1.2 MB 5.25" Floppy Drive
- 1.44 MB 3.5" Floppy Drive
- 120 MB Hard Drive
  (Add $175 for 200 MB)
- 1 Parallel, 2 Serial, Game Ports
- High Quality 101 Enhanced Keyboard
- 1024x768 .28 DOT Pitch 14" Color Monitor
  (Add $50 for non-interlaced)
- 1 MB SVGA Card

$1499

Option: Only $1359 for 20SX

486/20SX 64K Cache $1359
386/33 64K Cache $1279
386/40 64K Cache $1299

Same configuration as above

Stargate
intel inside

486/50 64K Cache

(Add $59 for 256K Cache)
(Add $399 for EISA board)

- AMI BIOS
- 4 MB RAM Standard (Add $160 for 8MB)
- 1.2 MB 5.25" Floppy Drive
- 1.44 MB 3.5" Floppy Drive
- 120 MB Hard Drive
  (Add $175 for 200 MB)
- Dual Hard/Floppy IDE Controller
- 1 Parallel, 2 Serial, Game Ports
- High Quality 101 Enhanced Keyboard
- 1024x768 .28 DOT Pitch 14" Color Monitor
  (Add $50 for non-interlaced)
- 1 MB Trident SVGA Card

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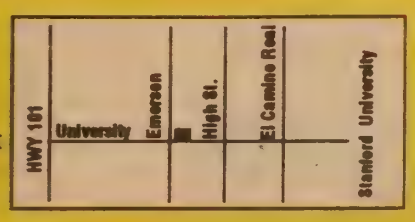

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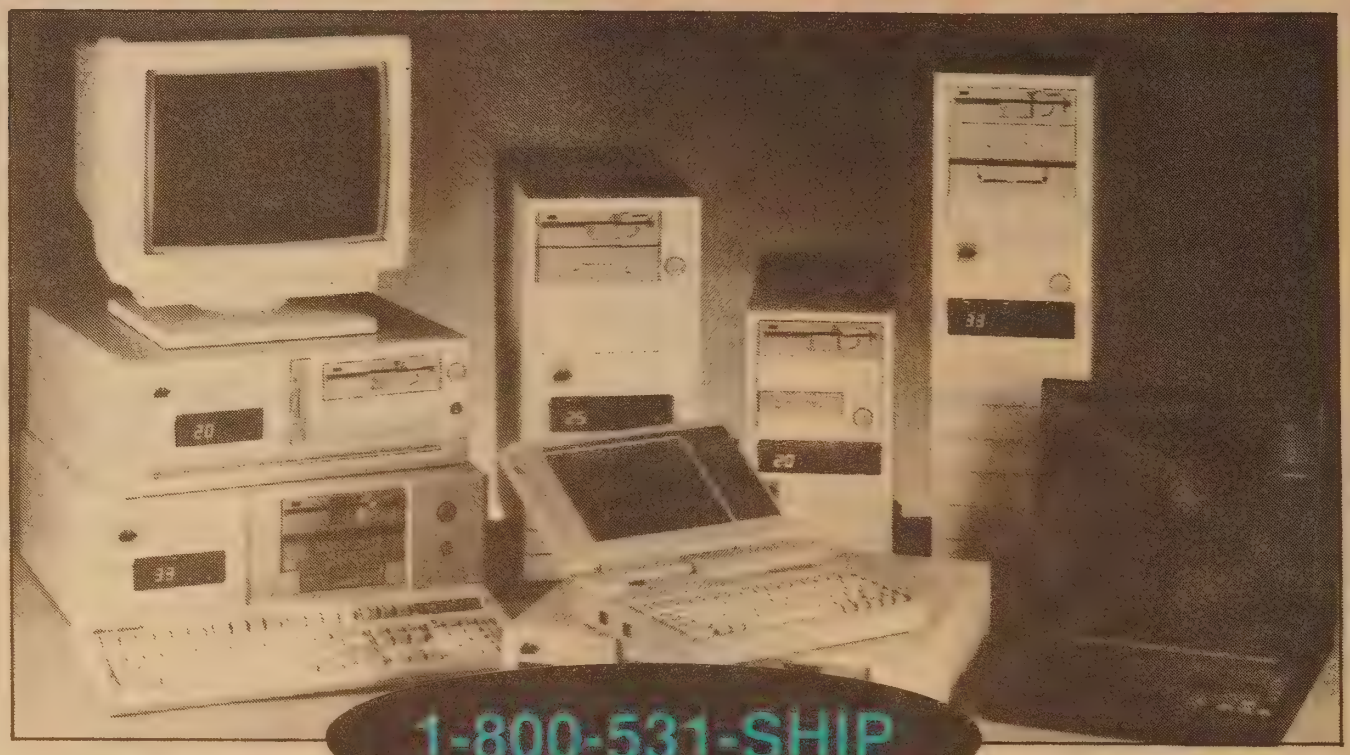

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- 8.5" x 11.7" x 2.0"
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- 3.5" 1.44 MB Floppy
- 40 (STANDARD) 60/80/120MB HARD DRIVE
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- (1) SERIAL, (1) PARALLEL PORTS
- MS-DOS 5.0 w/GW BASI INSTALLED
- DURABLE CARRYING CASE

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- 12.7" x 16.7" x 3.1"
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- DURABLE CARRYING CASE

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- 1.2 MB 5.25" FLOPPY DRIVE
- 1.44 MB 3.5" FLOPPY DRIVE
- 80 MB IDE HARD DISK
- 16 BIT COLOR VGA CARD
- 14" VGA COLOR MONITOR
- 101-KEY ENHANCED KEYBOARD
- MS-DOS 5.0

486SX/20 ..... $1595

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- 340 MB SCSI HARD DRIVE
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- SCSI CONTROLLER W/1 MB
- MONO MONITOR & VIDEO CARD
- TOWER CASE W/250W POWER SUPPLY
- MS DOS 5.0

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GS1-GS80K91-AGS223

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- 101-KEY ENHANCED KEYBOARD
- MS-DOS 5.0

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- INTEL 386™ 25/33 MHz CPU
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- 120MB IDE HARD DRIVE

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486/50 DX2 EISA/ISA $2995/2395

486/33 EISA/ISA $2895/2295

386/33..... $1695

386/25 NON-CACHE $1595

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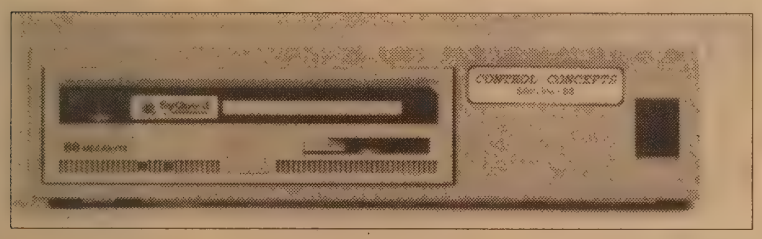
PRODUCT SPOTLIGHT

Continued from page 186

entry level, host-powered external drive for AT-bus PCs, $713; 90 PRO Insider, an internal drive for PCs, PS/2 and compatibles; $799; and 90 PRO Partner, an internal slave drive to add on to an Insider, $699; and 90 PRO Dual, two drives integrated into an external cabinet, $2099. Iomega Corp., 1821 W. 4000 S., Roy, UT 84067. 1-800-777-6179.

SYQUEST REMOVABLE DRIVES FOR SPARCSTATIONS

SyQuest Technology and Control Concepts, a leading federal government systems integrator and US-based manufacturer, have introduced a SyQuest removable technology drive for SPARC-based workstations.



Available in either a single or dual drive external subsystem, Control Concept's Slimline 88 for Sun offers 88MB of storage and the Slimline II/88 features 176MB of storage. Control Concepts developed the Sun workstation interface and the micro-SCSI (SCSI 2) connectors and cables required for SPARC-family peripherals. Up to seven drives can be attached to a single workstation. Both Slimline models are shipped complete with a 3-foot micro-SCSI interface cable, Delta Microsystems' S-SYQ software driver, a power cable, one 88MB removable cartridge per drive, and instruction manual. (The Slimline 88 is $1295 and the Slimline II/88 is $2195) SyQuest Technology, Inc., (510)226-4000. Control Concepts, Inc., (703)876-6444.

REVIEWS

GAMES

By Mike Markowitz

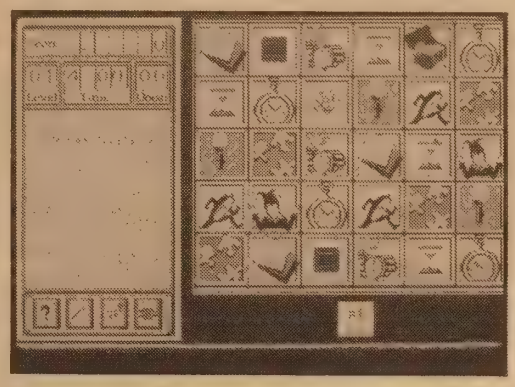
TIME TREKS

Designed By: Meg Strief, Bob Stevens, and David Smith
Published By: Earthquest
For: Macintosh (2MB RAM, 2.5MB under System 7, supports color)
List Price: $59.95

Here is another sugar coating on the bitter pill of history. Time Treks is a set of big, linked HyperCard stacks incorporating an adventure game and an archive of world history. This can be viewed as another instance of the wildly successful Carmen Sandiego paradigm of educational software.

Anyone who thinks that HyperCard is not an environment for serious software development should take a look at Time Treks. The program makes extensive use of color icons, although most of the graphics are scanned in monochrome.

The game is a wild hybrid of Jeopardy and a dungeon adventure. To gain control of squares, the Time Doors, on the board you have to answer various kinds of questions



about history. Some of the answers can be searched out in the Archives, others send you hunting through the cluttered rooms and secret tunnels of an archaeologist's laboratory. Many of the questions seemed like trivia to this history major, but an entertaining HyperCard stack for kids is probably not the best way to present and discuss heavy ideas.

You don't have to play the game to enjoy Time Treks—you can just explore the Archives, blazing your own trail through all kinds of topical and chronological links. The archives include many time lines that extend across multiple screens. The use of a constant time scale means that the screens are overcrowded with events in the 20th century but nearly empty back in prehistory.

Most of the maps in Time Treks are poorly redrawn monochrome bitmaps, using ugly pattern-fills. This is one area where color PICT files could have been used to good advantage. One of my favorite screens was a world map showing the Age of Exploration. When you click on the name of an explorer (Columbus, Da Gama, Magellan, Cook, etc.) an animated ship traces out the path of his voyage. At various places along the time lines you find an eye icon. When you click on the eye a text box pops up with a quotation from a contemporary document or eyewitness.

The program files are compressed (using DiskDoubler) onto four 800K diskettes. The package includes a fifth disk with a compressed copy of HyperCard 2.1 (the application only), which it requires. After installation the stacks take up about 3.6MB of hard disk space.

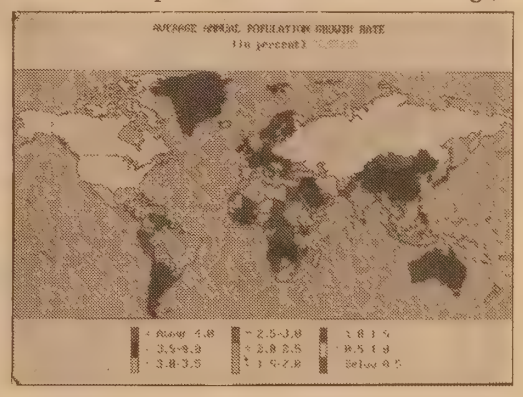
Graphics and Animation: 7
Sound: 6
User Interface: 8
Overall Value: 7

Time Treks is strong on structure but thin in content. The excellent overall design and the well-implemented navigation tools really deserve the kind of multimedia database that only a CD-ROM can provide. Once again the designer's imagination crashes up against the hard disk storage barrier. "We ended up cutting and cutting—first the graphics and then the database," one member of the design team told me. When I demonstrated Time Treks to several Mac-savvy elementary school teachers, they said their students would like it. (Earthquest, Inc., 125 University Ave., Palo Alto, CA 94301. 415/321-5838)

PCGLOBE, V5.0

Designed By: Donald Ditter, Roy Kessler, Eric Youngquist
Published By: PCGlobe
For: MS-DOS (640K, CGA/EGA/VGA/Hercules graphics, mouse optional, most printers supported)
List Price: $69.95 (annual update is $25)

One result of the "New World Order" is that all existing world maps and globes became obsolete. East Germany disappeared and fifteen new countries replaced the former Soviet Union. We still aren't sure how many rubble-strewn mini-states will replace the former Yugoslavia, but the latest release of PCGlobe credits Croatia and Slovenia with independent existence. The program reflects the world situation as of March 15, 1992, and that is a lot more current than anything you will find in a published atlas for quite a while. Annual updates are available to registered users. The price of PCGlobe seems high,



compared to a paper-based atlas that offers vastly more graphic detail, but books usually don't have annual updates

As my old geography teacher once said, "Any map that lies (flat), lies (untruthfully)." PCGlobe is not a globe at all, in fact the base map uses a variation of the abominable Mercator projection, making Greenland look as big as South America .

You can zoom in to continental, regional, or individual country maps. The program has a logical menu structure and a smooth point-and-click interface for mouse users.

Country maps can be displayed with or without cities, elevations, rivers, and topographic features. Screens can be saved as standard .PCX files, letting you import maps into any other program that recognizes

Continued on page 203

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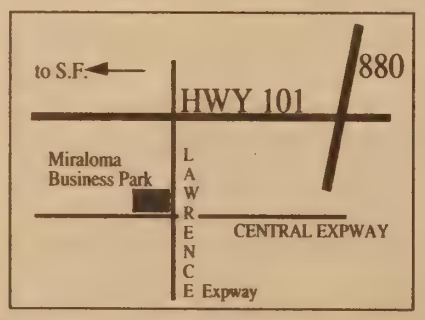

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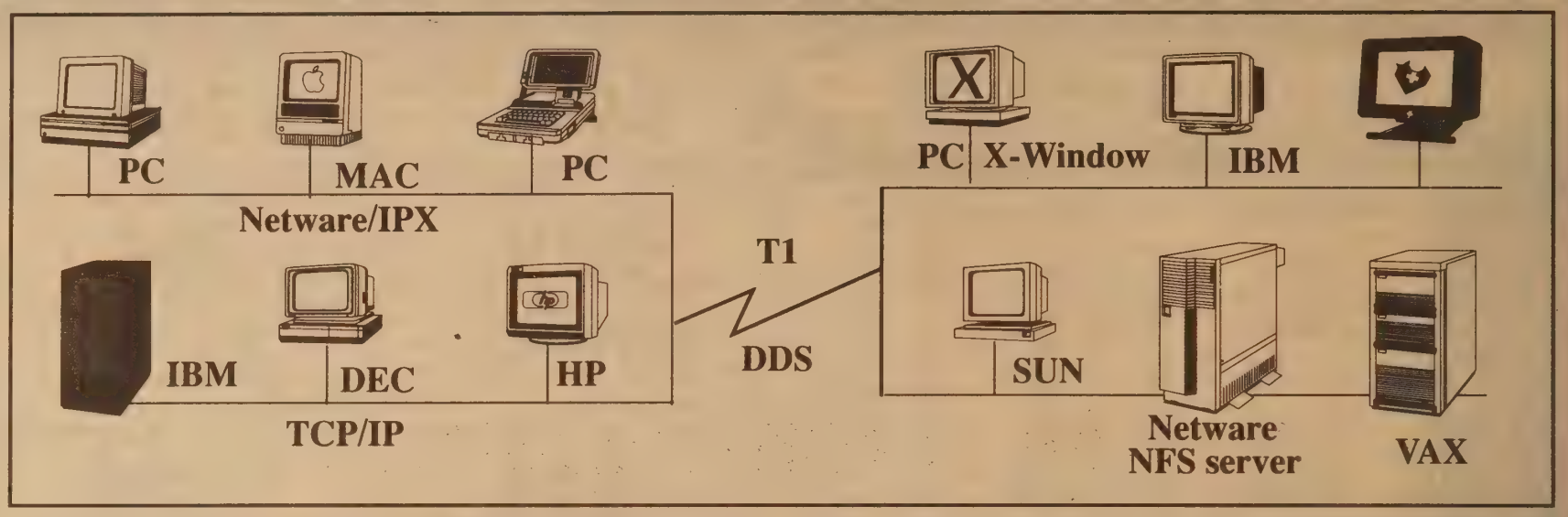

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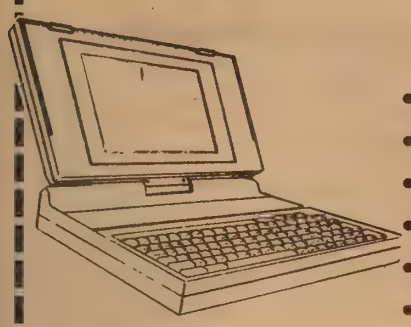

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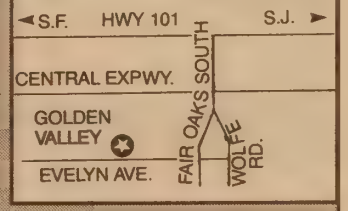

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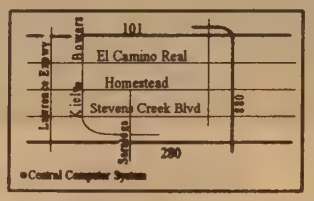

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- MA2565 12" mono amber ... 75
- MZ4571 14" mono paperwhite ... 115
- ML4571 14" VGA mono 640x480 ... 125
- CVM4967 14" 1024x768, .28 ... 305
- CSD5577 15" Flat, 1024x768, .28, NI ... 525
- CSA 7571 17", 1024x768, .31, NI ... 839
- CSF7487 17", 1280x1024, .26, NI ... 1055

SEIKO
- CM1450 14", 1024x768, .25, NI ... 529
- CM2050 20", 1024x768, .31, NI ... 1625

SIIG
- 9" Mono paper white ... 115

SONY
- 1304S 14", 1024x768, .25, NI ... 569
- 1604S 17", 1024x768, .25, NI ... 1055
- 1936 20", 1280x1024, .30 NI ... 2455

15 MOTHERBOARDS

- 286-16 ... $105
- 386-33 128K cache w/o CPU ... 165

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- 386SX-20 ... 195
- 386-25 w/o cache ... 285
- 386-33 64K cache ... 360
- 486-33 64K cache (Novell certified) ... 735

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- 386SX-20 Gemini, Phoenix BIOS (32MB max) ... 255
- 386SX-25 ... 245
- 386-33 64K cache Gemini (32MB max) ... 435
- 486SX-20 ... 555
- 486-33 256K cache ISA ... 825
- 486-33 256K cache EISA E2 ... 1145
- 486-50 256K cache ISA ... 1295
- 486-50 256K cache EISA ... 1675

MICRONICS ACCESSORIES
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- 16MB Memory Card ... 150
- upgrade to 256K cache for old 486-33 ... 80

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- 486-33 64K cache ... 655
- 486-50 256K cache ... 995
- 486-50 256K cache EISA ... 1295
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- 486-50 256K cache ISA ... 1255
- upgrade to 256K cache for 486-33 ... 80

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- SM386-40F 128K cache ... 295
- SM486-33 128K cache ... 595
- SM486-33 256K cache ... 615

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- IMPC-60 3 button mouse ... $18
- IMPC-40 trackball ... 29

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- 3C503 8 bit coax ethernet ... 175
  - 5 packs (5 boards 1 manual) ... 799
- 3C507 16 bit coax ethernet / 5 packs ... 279/1250
- 3C503-TP 8 bit TP ethernet / 5 packs ... 235/1050
- 3C507-TP 16 bit TP ethernet / 5 packs ... 299/1450
- 3C523B Etherlink/MC for PS/2 / 5 packs ... 289/1210
- 3C523B-TP TP for PS/2 / 5 packs ... 319/1435

ARTISOFT (Lantastic)
- AE-2 Ethernet starter kit,10Mbps v4.1/win ... 459/469
- AE-3 Ethernet starter kit,10Mbps v4.1/win ... 535/545
- 10BaseT starter kit v4.1 ... 595
- 2Mbps starter kit v4.1 ... 355
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- FaxPress (Network Fax Server) Fax from within DOS or Win application, supports PCL,Postscript emultion, supports Novell, MS LAN, IBM LAN (different model)
  - Novell 1 line ethernet coax ... 2595
  - Novell 2 lines Token Ring 16/4Mbps ... 3225
- JetPress (Network Print Server) for HP II,IID,III,IIID supports thin ethernet and 10BaseT, supports up to 32 queues on up to 8 file servers ... 429
- LANPress (Network Print Server) connects up to 4 printers, supports up to 32 queues on up to 8 file servers
  - Ethernet Thick/Thin coax (1P 3S) ... 489
  - Ethernet Thick/Thin coax (2P 2S) ... 625
  - Ethernet 10BaseT (1P 3S) ... 489
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- 16 bit NE2000 coax ethernet ... 165
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Netware Lite 69
Netware 2.2
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50 users / 100 users 1925/2955
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16 bit TP Ethercard Plus Elite 16T / 6 pack. . 179/975
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Ethercard Plus/A for PS/2 220
Netware Boot ROM 34
8 Port Concentrator (10 Base T Ethernet) 359

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PE2-10B2 Pocket Adapter Ethernet coax 325
PE2-10BT Pocket Adapter Ethernet 10BaseT 357
PT2-16B3 Pocket Adapter Token Ring 16/4Mbps . 615

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APC-900 Smart-UPS (386, 486, FS and WS) 639
APC-1250 Smart-UPS (multiple FS and WS) 799
APC-450 Back-UPS 286, ps/2, 386. 235
APC-600 Back-UPS 286, 386 FS 299
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APC-750 On-Line UPS (286, 386, 486 FS). 1365
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APC PowerChute for UNIX 79
Power Doctor (for DOS) I/F kit for Smart-UPS 79

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CANON
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HEWLETT PACKARD (LaserJet w/ toner)
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Desk Jet 500C 679
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Envelope Feeder for IIID 295
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Toner for HP IIP, IIP+, IIIP 75
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1MB / 2MB 75/115
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TrueLaser 6ppm,2MB,35 fonts. 1355

PACIFIC DATA PRODUCTS
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1124i / 1624 / 1695 ..... 285/349/345
Auto sheet feeder for 1124 only KX-P36. 120
2123 24 pin, 43.5dBA, color capability 249
2124i 24 pin, 43.5dBA, color capability 319
2180 9 pin, 45dBA, color capability 169
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Single bin cut sheet feeder KX-PT10. 95
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21 TAPE BACKUP

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FC-10 Controller 95
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SUMMIT
SE120 120MB w/ Central Point Back up 195
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1MB, HI-color, 16 million color, 24 bit 175
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8860 1MB 1280x1024 HI-color. 239

HERCULES Graphics Station 1MB. 495

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16 colors at 72 Hz ..... call
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16 colors at 72Hz, 1MB VRAM 1MB DRAM . 1225
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Project 4.0 for Windows. 419
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UNIX 386 Dev Sys 3.2.2 C-Compiler & Dev Tools . 995
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this format. At your request, the program can display a rather small version of each national flag (you miss the fine detail of Saudi Arabia's Arabic calligraphy or Guatemala's quetzal bird), and beep out a rendition of the national anthem.

PCGlobe includes a fairly extensive database of demographic, economic, and social information for each country. Some of this information is displayed graphically in the form of bar charts. The screen of historical information is mostly a list of dates and events. There is even a screen of tourist information: we learned that the water in Moldovia is not always potable, but not to miss the Pushkin Museum in Kishinev.

You can create your own comparative bar charts, using selected statistics for any country, groups of countries, or regions. A neat little utility will compute and display the distance between any two cities chosen from an extensive list. It will even give you the distance between any two points if you enter the latitude and longitude.

Graphics: 8
Sound: 7
User Interface: 7
Overall Value: 8

The feature I would most like to see added to PCGlobe is a true representation of the world as a globe, that you could freely rotate and zoom. I also felt that the lack of maps for the North polar region and Antarctica made the package incomplete.

The program is installed from two 720K or four 360K disks. The user manual provides clear explanations of the program's many features and options. PCGlobe has an excellent set of printer drivers, including support for many color printers. I would highly recommend this package for any student or school with an MS-DOS system that supports VGA graphics (at the limited resolution of CGA, the maps are rather jagged.) Journalists, pilots, navigators, and business users with international interests will also find PCGlobe useful. (PCGlobe Inc., 4440 S. Rural Rd., Tempe, AZ 85282-7044. 602/730-9000)

HARDBALL III

Designed By: Jeff Sember
Published By: Accolade
For: MS-DOS (640K, EGA/VGA, Supports Soundblaster and Adlib stereo cards; 10MHz or faster AT-class machine and joystick recommended, mouse is supported for menu selection, but not gameplay)
List Price: $59.95

As the coach says in the film *Bull Durham,* "This is a simple game. You throw the ball. You hit the ball. You catch the ball. Some days you win. Some days you lose. Some days it rains."

Simulating baseball on a desktop computer however is not so simple. Most computer users who buy a flight simulator program have probably never piloted a jet fighter, but almost everyone who buys baseball software has played the game, and therefore has some definite expectations about the look and feel of the experience.

Hardball III, as the name suggests, is a third-generation entry in a very competitive market. If you already have

Continued

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- 8K internal Cache, 0 wait state
- *Weitek* 4167 Co-processor socket
- 256K fast SRAM Cache on board (20NS)
- 1MB RAM, Maximum 64MB
- *AMI* BIOS, *Intel* 82350 EISA chipset
- Eight 32bit EISA slots
- *DTC* 3290AS EISA SCSI Cache controller 32bit , with 512K RAM (Maximum 4MB), Data transfer rate 33MB/sec
- 275 Watt power supply with two cooling fan
- Full tower case with 7 drives bay
- *Teac* One 5 1/4" 1.2MB floppy drive
- *Teac* One 3 1/2" 1.44MB floppy drive
- Two serial, One parallel & Game port
- *Focus* 2001 enhanced keyboard
- Landmark 197MHz (V1.14)
- Power meter 19.9 mips (V1.5)

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- Trident SVGA card 1024K, 1024x768 resolution, non-interlaced, with ViewSonic 6 non-interlaced montor $459
- Monochrome graphics card 720x350 resolution with 14" flat screen high resolution (720x350) Amber or paper white sreen $ 115
- System with UltraStor IDE Cache controller $1999
- **Hard disk drive list see oppisite page**

486-DX/2-50MHz

Ultrastor 15C Cache controller

Maxtor 210MB hard drive

256K cache RAM, AMI BIOS, 1 MB RAM, *Ultrastor* 15C Cache controller W/ 1MB (8MB maximum), Duel floppy drive, TVGA card w/1024K, *Viewsonic* 6 14" non-interlaced monitor, One parallel, two serial ports, 275 Watts power supply with two cooling fan, Full tower case with 7 drive bay, Focus 2001 enhanced keyboard,
Optional: additional memory per megabyte $39,

$2395

486-33MHz

64K Cache
1MB RAM

$777

- *Intel* 80486DX-33MHz CPU, 0 awit state
- *AMI* BIOS, Co-Processor build-in
- 64K fast SRAMCache
- 1MB RAM on board, 64MB Maximum
- *Teac* 1.2MB or 1.44MB floppy drive
- Two serial, one parallel, game port
- *Focus* 2001enhaced keyboard

Conner 210MB IDE hard drive, *Viewsonic* V6 Non-interlaced SuperVGA system **$1697**

Conner 210MB IDE hard drive, 14" Hi-res. Mono System **$1277**

386-33MHz

64K Cache
1MB RAM

$439

- *Intel* 80386DX-33MHz CPU
- *AMI* BIOS, Co-Processor socket build-in
- 64K fast SRAMCache on board
- 1MB RAM on board, 32MB Maximum
- *Teac* 1.2MB or 1.44MB floppy drive
- Two serial, one parallel,One game port
- *Focus* 2001enhanced keyboard

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Conner 120MB hard drive, 14" Mono System **$ 899**

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- *Phoenix* BIOS (128K ROM)
- 8K internal cache memory
- 4MB RAM upgradable to 8MB or 20MB

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- Weight 6 lbs:(with battery), MS DOS 5.0 w/ Video utilitys & driver automatic power management, Cover close alarm, complete User's menual

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Pro-Designer IIS	1MB	1024x768	169

Diamond

Stealth VRAM	1MB VRAM, 1280x1024 , Accelerator S3 chip		269
SpeedStar	1MB , 1024x768,	Non-interlaced	169

MONITORS

ViewSonic

V4E	14"	1024x768 .28	319
V6	14"	1024x768 .28 Non-interlaced	359
V7	17"	1280x1024 Non-interlaced	1099
V8	20"	1280x1024 .31	1699

ViewSonic Non-Interlaced

6 *$359*

- 14", .28 dot pitch
- 1024x768 resolution
- 72Hz refresh (800x600)

NEC

3FGX/ 4FG/ 5FG			669/749/1399
6FG 21"	1280x1024	.28mm 135MHz bandwidth	2999

Sony

1304S	14"	1024x768	.25	Non-interlaced Low radiation	559
1604S	17"	1024x768	.25	30-57 KHz scan frequency	1075
1936	20"	1280x1024	.30	Non-int. Low radiation	2499

Panasonic

C1381i	14"	1024x768	.28	IBM/MAC 800x600 Non-int.	329
C1395	14"	1024x768	.28	Non-interlaced	469

DRIVES

Brand	model	capacity	speed	warranty	price
IDE Hard disk drive					
Conner	CP3000	42 MB	28 ms	1 year	185
Conner	CP30084	80 MB	19 ms	1 year	269
Conner	CP30104	120 MB	19 ms	1 year	319
Conner	CP3204	212 MB	19 ms	1 year	499
Conner	CP3504	510 MB	13 ms	1 year	869
Maxtor	7080AT	80 MB	17 ms	1 year	269
Maxtor	7120AT	125 MB	15 ms	1 year	319
Maxtor	7213A	213 MB	15 ms	1 year	499
Maxtor	LXT-340A	340 MB	15 ms	1 year	569
Fujitsu	M2622T	330 MB	12ms	5 year	879
Fujitsu	M2623T	420 MB	12 ms	5 year	969
Fujitsu	M2624T	520 MB	12 ms	5 year	1089
SCSI hard drive					
Conner	CP3544	540 MB	fast	1 year	929
Maxtor	LXT-213	213 MB	15 ms	1 year	549
Maxtor	XT-4170S	158 MB	16 ms	1 year	729
Maxtor	XT-8380S	360 MB	14 ms	1 year	1089
Maxtor	XT-8760S	650 MB	14 ms	1 year	1199
Maxtor	PO-12S	1.2 GB	13 ms	1 year	1799
Fujitsu	M2623S	425 MB	12 ms	5 year	Call
Fujitsu	M2263SA	687 MB	12 ms	5 year	1269
Fujitsu	1.2GB	1.2GB	14 ms	5 year	1799

Controller (IDE & SCSI)

UltraStor 15C	IDE 0k , 8MB Max.	229
UltraStor 24F	SCSI (EISA) 64k buffer, fast SCSI-2 33MB/sec	449
UltraStor 14F	SCSI (AT), 64K buffer, Fast SCSI-2 10MB/sec	249
Future Domain	TMC-1680 SCSI-2 (AT), drive 4 floppy	199
DTC	2290 IDE (EISA), drive 3 floppy, 7.1MB/sec	149
DTC	3280 SCSI	129
DTC	3290 SCSI (EISA),	499

PRINTERS

Panasonic

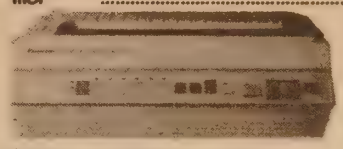
KX-P1123	24 pin	214 cps	80 col		199
KX-P1124i	24 pin	240 cps	80 col		289
KX-P2123	24 pin	240 cps	80 col	quiet	249
KX-P2180	9 pin	192 cps	80 col	quiet	169
KX-P1624	24 pin	240cps	132 col		349
KX-P1695	9 pin	330cps	132 col		349
KX-P2624	24 pin	300 cps	136col		379
KX-P4410	Laser	5 ppm	512K		645
KX-P4450i	Laser	11 ppm	512K		1099
KX-P4455	Laser PS	11 ppm	2 MB	39 ps fonts	1695

EVEREX

Abalon laser 6ppm PS 24 fonts PCL4 Apple talk 999

Hewlett Packard

DeskJet	500 / 500C	399/685
LaserJet	IIP plus / IIP	777/999
LaserJet	III / IIID	1469/2295
LaserJet	IIISi	3495



EPSON

LQ-570	24 pin	315 cps	80col		269
LQ-870	24 pin	413 cps	136 co		459
LQ-1070	24 pin	315 cps	136col		359
LQ-1170	24 pin	413 cps	136col		599
LQ-2550	24 pin	400 cps	136col		899
FX-850	9 pin	264 cps	80col		309
FX-1050	9 pin	264 cps	132col		419
EPL-7000	Laser	6 PPM	512k		819
EPL-7500	Laser PS	6 PPM	2MB		1979
EPL-8000	Laser	10PPM	13 Scalable fonts		1379

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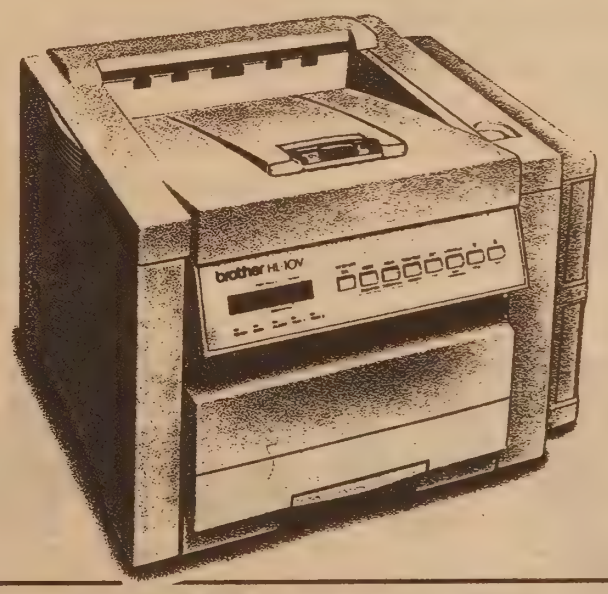

Just Compare:

	Brother HL-10V	HP LaserJet III
Pages per minute	10	8
Scalable fonts	12	8
Bitmapped fonts	24	14
Universal Tray	YES	NO
Gray Scales	64	8
Auto-Interface Switching	Standard	NO
Auto-Emulation Switching	Standard	NO

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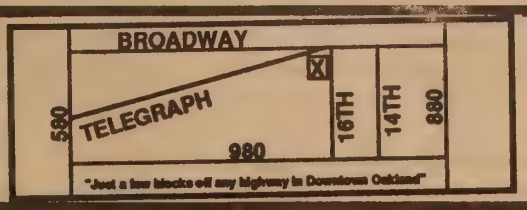

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Tech Support: 510-763-0949

teams created in HardBall II, Earl Waver Baseball II, or Tony La Russa's Ultimate Baseball, you can import them into HardBall III with all their statistics intact. The program takes up only 2MB of hard disk space. If you have 2MB or more of RAM, Hardball III provides play-by-play voice commentary using the digitized voice of Al Michaels, a well-known major league announcer. There is an instant replay feature, and you can save replays to disk to create your own "highlight reel."

Graphics and Animation: 9
Sound: 9
User Interface: 7
Overall Value: 9
(If you like baseball)

The game is manager-oriented, with extensive options for editing team rosters and player statistics. You have control over the starting lineup, batting order, positioning of fielders, and rotation of pitchers. The screen shows the pitcher's view when you are on the mound and the batter's view when you are at the plate.

You can choose among eight accurately rendered ballparks, including San Francisco, Detroit, and Boston. Accolade will offer an add-on disk with the other eighteen major-league stadiums.

You have a choice of eight different pitches. Pitchers are rated on speed, accuracy, stamina, and handedness.

The package includes a 54-page user manual and a cardboard code-wheel (off-disk copy protection).

BOOK REVIEW

BMUG GUIDE TO BULLETIN BOARDS AND BEYOND

Written By: Bernard Aboba
Published By: BMUG, Inc.
List Price: $23
Reviewed By: Bill Gram-Reefer

Hot off the press comes a major reference work all Macintosh sysops, BBS wannabes, and network surfers should have on or near their desk. *The BMUG Guide to Bulletin Boards and Beyond* is a 546-page compendium covering the wide-open world of BBSing with a Macintosh twist. Expertly written by Bernard Aboba, the reigning chief sysop of the Berkeley Macintosh User Group (BMUG) BBS, the Guide is dedicated to making sense of the online world of BBSs, global networks, and the software and hardware tools you might need to get there and back safely—and in a proper frame of mind.

Several things about this tome stand out. First, Aboba includes some original oral history from Mac and network oldtimers like Tim Pozar, Leo LaPorte, Vernon Keenan, and Michael Connick, author of Tabby. Each recalls his part and understanding of the development of the EchoMac conference carried on the Fidonet backbone. There is also an interesting history of BMUG's bulletin board from its launch in Reese Jones's home to the heady plans for a full-blown, world-networked UNIX system. These stories give good account of the Macintosh user community's contribution to the development of networks and PC-based communications that now serve millions of people around the world.

The contents of this paperback cover the gamut from basics to arcane. Topics include: terminology; recommended products; primers on how modems and computers talk to each other; samplers on BBS host and communication software; and capsule descriptions of several BBSs including screen shots of what you'll see when logged on. There are in-depth sections on Internet, Fidonet, and other networks including conference lists, Mac nodes, and network etiquette. The most compelling sections are the Internet discussions and associated tables, how-to instructions, and "here's what

Continued on page 211

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NON-INT. SVGA Monitor
DOS, Windows, Mouse

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.256KB Static RAM Cache
.170 MB IDE Hard Drive
.TEAC 1.44 & 1.2 MB Floppy Drives
.MicroScan3E 14" 1024x768 .28DP SVGA
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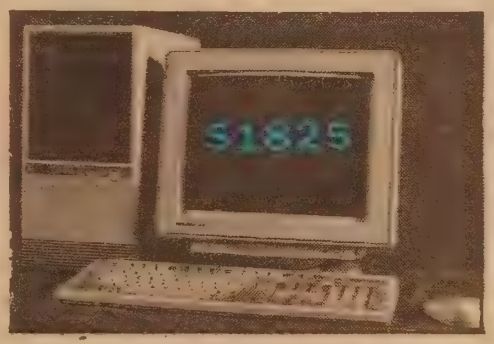

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.256KB Static RAM Cache
.420 MB SCSI Hard Drive
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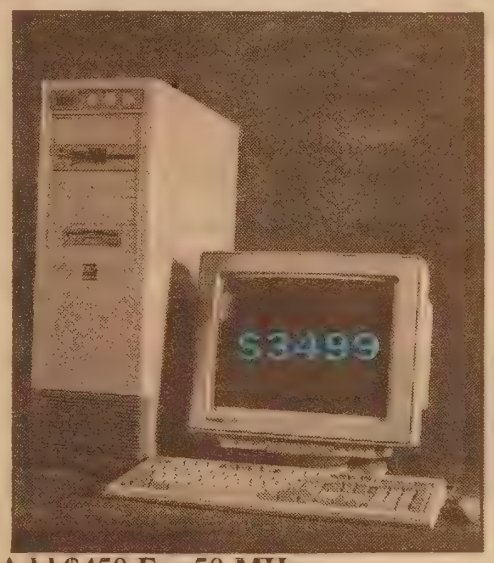

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32,768 Colors 1M SVGA
1024x768 SVGA

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.4MB 70 ns RAM Expandable to 32MB
.64KB Static RAM Cache
.105 MB IDE Hard Drive
.1.44 or 1.2 MB Floppy Drive
.14" SVGA 1024x768 Monitor
.ET4000 1 MB 16 Bit SVGA w/ 32K Colors
.101 Enhanced Keyboard
.2 Serial, 1 Parallel, 1 Game ports
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486-33-64K CACHE

.INTEL 80486DX-33MHz CPU
.4 MB 70 ns RAM Expandable to 32MB
.64KB Static RAM Cache
.120 MB IDE Hard Drives
.1.44 & 1.2 MB Floppy Drive
.MicroScan 2E 14" 1024x768 .28DP SVGA
.ET4000 1MB 16 Bit SVGA w/32K Colors
.101 Enhanced Keyboard
.2 Serial, 1 Parallel, 1 Game Ports
.1 8-Bit 7 16-Bit Expansion Slots
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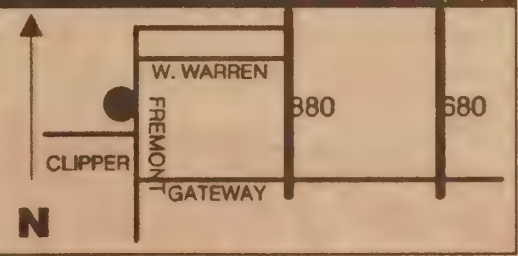

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MICRONICS COMPUTERS, INC.

486-50 $3,365

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- 256K Cache
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- 14" Super VGA color monitor (Non-Interlaced1024x768) .28 dp
- 1MB 16bit VGA (1024x768) card
- 16 Bit SCSI controller
- 1.2MB and 1.44MB floppy drives
- 8 Expansion slots
- I/O 2 Serial, 1 Parallel, 1 Game Ports
- 101 Enhanced keyboard
- Built-in math coprocessor
- Weitek coprocessor socket
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- Supports MS-DOS, UNIX, & NOVELL software
- MS DOS 5.0, MS Windows 3.1 & Mouse
- Vertical case with power supply

ECI 486DX/50MHz 256K Cache 213MB Super VGA System

ISA $2,295

ECI 486DX/33MHz 256K Cache 213MB Super VGA System

ISA $1,995

- 8K Internal, 256K external cache
- 4MB RAM expandable to 32MB onboard
- 213MB 15ms IDE HARD DRIVE
- 14" Super VGA color monitor (Non-Interlaced 1024x768) .28 dp
- 1MB 16bit VGA (1024x768) card
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- 1.2MB and 1.44MB floppy drives
- 8 Expansion slots
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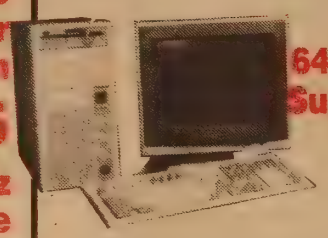

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- 14"Super VGA color monitor (1024x768) .28dp
- 1MB 16bit VGA (1024x768) card
- 2HD/FD controller
- 1.2MB and 1.44MB floppy drive
- 2 Serial, 1 Parallel, 1 Game Ports
- 101 Enhanced keyboard
- Weitek coprocessor socket
- Clock/calendar w/battery backup
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ECI 386SX-25 85MB Super VGA System

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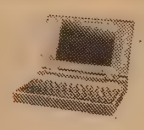

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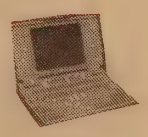

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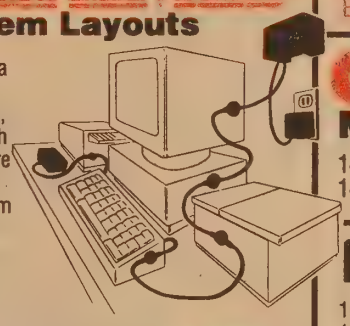

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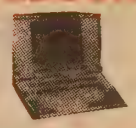

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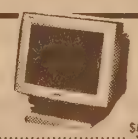

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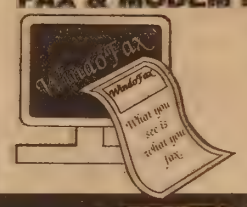

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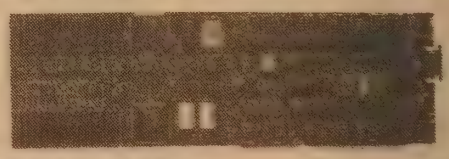

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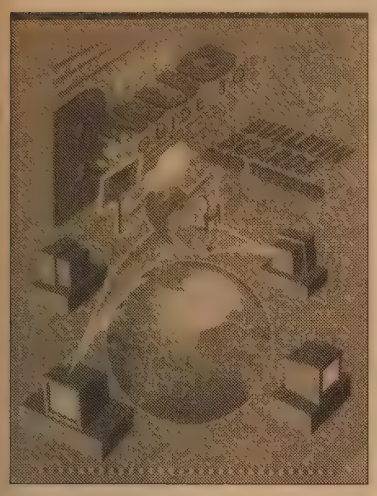
PRODUCT SPOTLIGHT

Continued from page 206



you'll see" snapshots. The product capsules, particularly the discussions on Macintosh telecommunications software products, are less helpful.

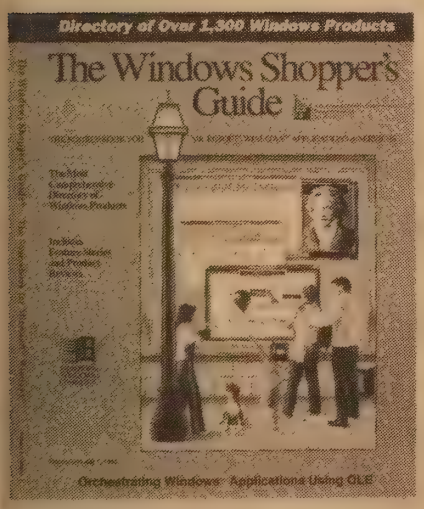
Send your $23 now, even if you don't run a Mac or regularly send your phone bill to the eighth dimension. *The BMUG Guide to Bulletin Boards and Beyond* is a helpful, comprehensive effort that won't collect dust on a shelf, because you'll be using it. (BMUG, Inc., 1442-A Walnut St. #62, Berkeley, CA 94709. 510/549-2684)

THE WINDOWS SHOPPER'S GUIDE

Published By: WhiteFox Communications
List Price: $24.95
Reviewed By: Birrell Walsh

I can't decide if it is colossal chutzpah or a public service.

The people at WhiteFox Communications are putting out a book of Windows products. It is updated semiannually, and each edition costs $24.95 ($46.95 for a yearly subscription). Each volume contains some short articles, and hundreds of listings of products that work with Microsoft Windows, and of consultants who will help you build Windows systems. The products receive a brief five- or six-line sting unless their vendor pays for a larger slot.



The chutzpah part is that you are asked to pay for a directory of products, when common sense suggests it is the *vendors* who should be paying to get their message to you.

I needed to find out what communications products were available for Windows. I did not have any inclination (or time) to search through magazines for reviews. I found 120 listings in the "Communications/Connectivity" section of the Shopper's Guide. With each listing was a price, an address, a description of the product, and icons for special features like DDE, OLE, Multimedia, and PenWindows support.

The 1300 listings are well laid-out, many with screen shots. The indexes seem complete. Products range from business software through development systems to games and hardware. Upcoming products are in a section of their own. The whole volume is attractively produced.

This book of software, hardware, and people will pay for itself in ten minutes if you are managing the conversion from a DOS shop to a Windows shop. The consultant listing might save your life if you need help quickly. It still seems that it ought to be free—but maybe I'm just jealous that someone has found a way to make a living in beautiful Oregon. (WhiteFox Communications Inc., 1800 N.W. 169th Ave., Suite 700B, Beaverton, OR 97006. 503/629-5612. Fax: 503/645-8642)

PC SOFTWARE REVIEW

BY DESIGN FOR WINDOWS

Published By: Streetwise Software
List Price: $99 (DOS version also available)
Reviewed By: John Wolcott

It's no secret that WordPerfect for Windows allows powerful flexibility in page design. However, using WordPerfect for desktop publishing (DTP) can be difficult. In fact, seminars are offered to provide training for just these skills. Developed as a WordPerfect for Windows enhancement, By Design offers a wide range of page layout and clip art that makes attending such seminars unnecessary. While it doesn't offer quite the flexibility of high-end DTP programs, it does make an easy job of using the power of WordPerfect for Windows to style your company newsletters, labels, memos, brochures, and even fax cover sheets.

The documentation included with By Design goes well beyond an ordinary manual. Yes, the normal basics of operation are there. However, the impressive features are the simple guidelines it covers for correct publishing procedures and creative suggestions for your specific applications. The manual offers excellent counsel for DTP newcomers and will inspire veterans with fresh ideas.

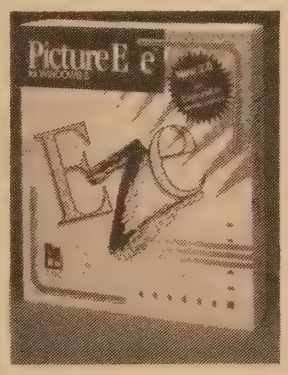
By Design creates its own tool button bar for the WordPerfect for Windows screen that can be loaded as a default when you launch WordPerfect. The tools from the button bar allow access to all of the program features. Page layouts are already designed for almost any publishing task, including plenty of options for page borders, lead characters, graphic fonts, and clip art. Some difficulty was encountered when selecting page layouts, but this was easily overcome using WordPerfect's sizing and placement tools.

If you've been considering an upgrade to WordPerfect for Windows, this package is a good reason to do so. With By Design, polished results are as simple as a few mouse clicks on the tool bar. (Streetwise Software, 2210 Wilshire Blvd., Suite 836, Santa Monica, CA 90403-5784. 310/829-7827)

PICTURE EZE

Published By: Application Techniques
List Price: $149.95
Reviewed By: Rich Grace

Picture Eze is a convenient, fully Windows-compatible program that provides a valuable bridge between many, if not all, of your DOS and Windows programs. Picture Eze's major job is to convert picture files to a myriad of graphics formats within Windows. By and large, it does that quite well. The program supports over one hundred Windows and DOS applications, and over 125 specific file formats, including Macintosh and Amiga formats, in up to sixteen million colors. The program is easy to use: to convert any graphics file, simply select Save As and choose the format you want. Picture Eze also includes image enhancement capabilities such as graphics rotation, color adjustments for brightness, contrast, content, and cropping. You can view a picture in magnifications from 25% to 400%.



Picture Eze is bundled with Capture Eze, a Windows screen capture program. The capture program uses a hot key combination to let you capture a full screen or an individual program window. A screen capture can then be converted to any format that Picture Eze supports. One of the few problems I've had with Picture Eze was converting complex digitized photographs in CompuServe .GIF format; the system would hang during this operation. Otherwise, this program works very smoothly.

Overall, Picture Eze is an excellent tool, and a must for serious graphics use. (Application Techniques, Inc., 10 Lomar Park Dr., Pepperell, MA 01463. 508/433-5201) ■

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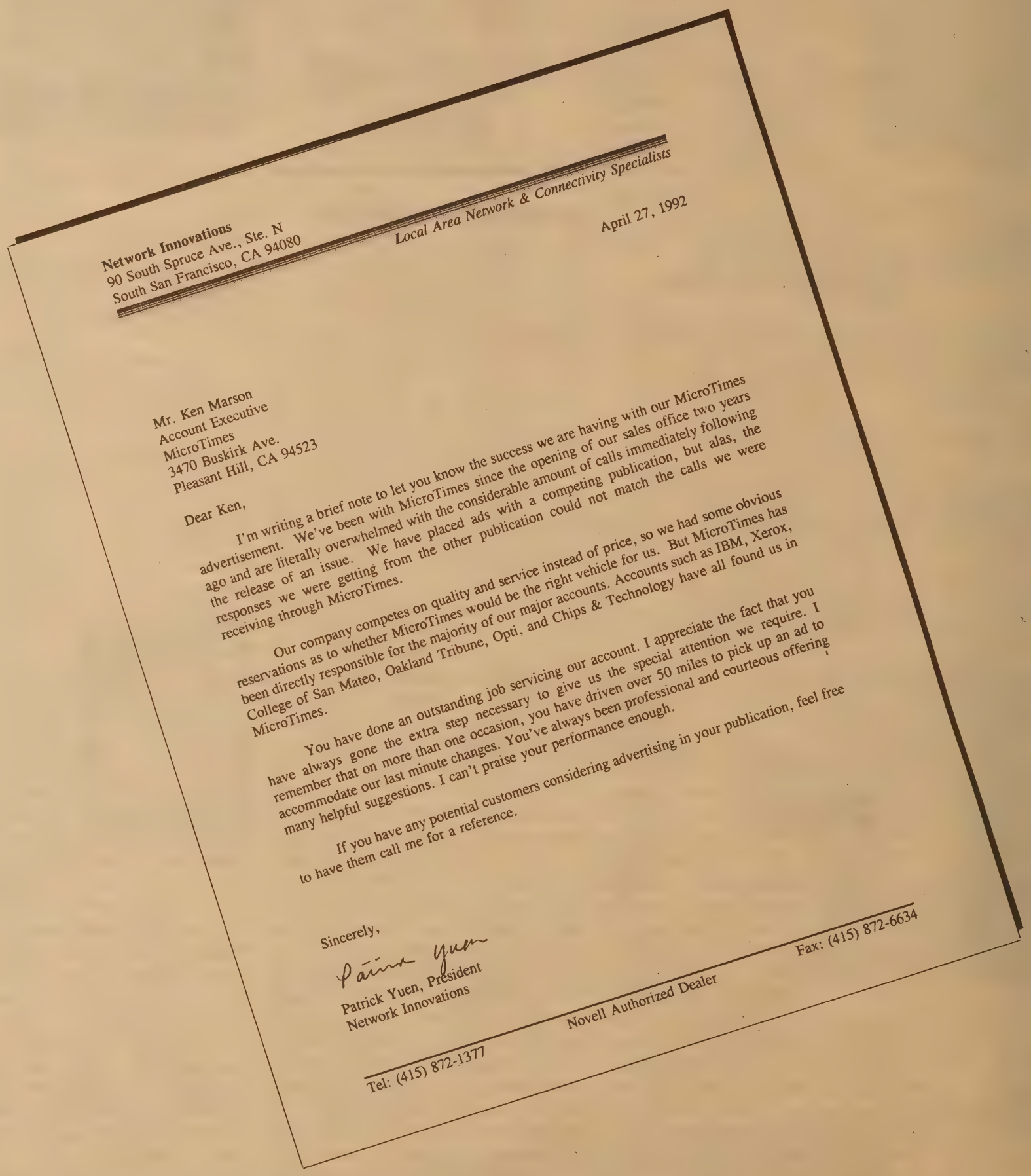

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Local Area Network & Connectivity Specialists

April 27, 1992

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Account Executive
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Our company competes on quality and service instead of price, so we had some obvious reservations as to whether MicroTimes would be the right vehicle for us. But MicroTimes has been directly responsible for the majority of our major accounts. Accounts such as IBM, Xerox, College of San Mateo, Oakland Tribune, Opti, and Chips & Technology have all found us in MicroTimes.

You have done an outstanding job servicing our account. I appreciate the fact that you have always gone the extra step necessary to give us the special attention we require. I remember that on more than one occasion, you have driven over 50 miles to pick up an ad to accommodate our last minute changes. You've always been professional and courteous offering many helpful suggestions. I can't praise your performance enough.

If you have any potential customers considering advertising in your publication, feel free to have them call me for a reference.

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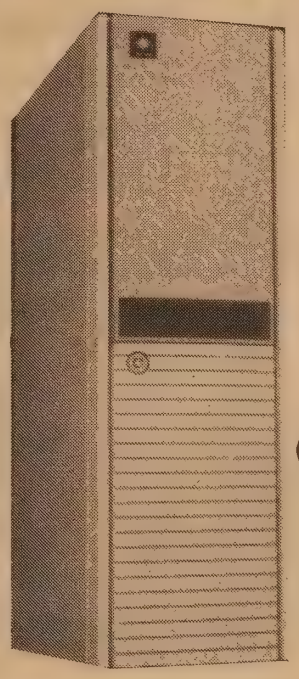

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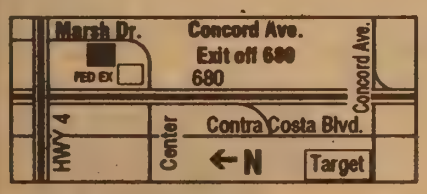

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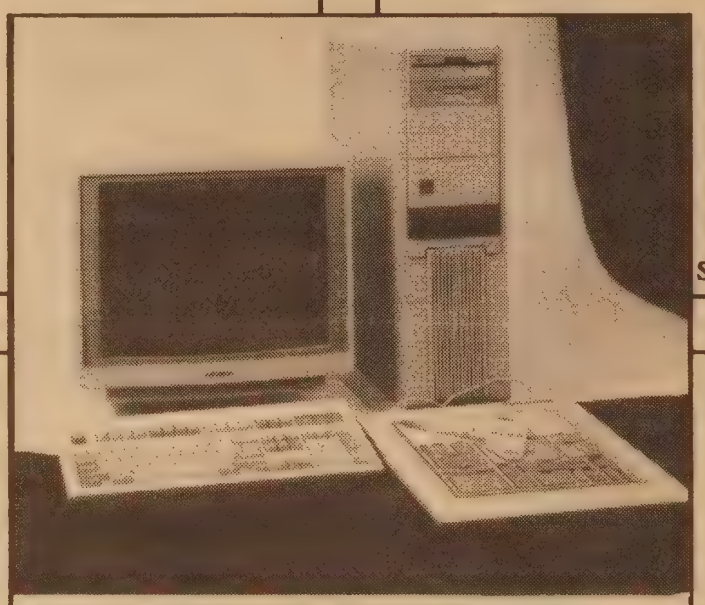

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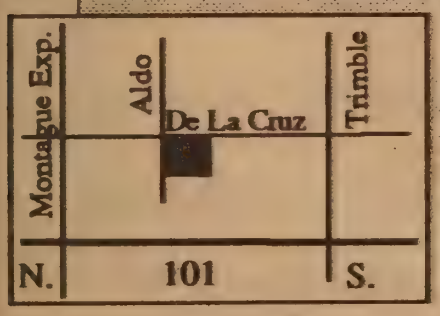

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Iris Jams With The Dead

Morphing guitarists: Jerry Garcia turns into Bob Weir.

A Dead show presents unique problems for a video crew. Says Grateful Dead video director Bob Hartnett, "Whereas most tours are highly choreographed, right down to the seeming ad libs, here it's totally improvisational all the time."

BY MARY EISENHART

Some months ago, the Grateful Dead, contemplating their twenty-seventh year on the road and the ever-larger venues needed to accommodate their growing crowds, decided the computer video at their shows needed work. Long noted for fanatical perfectionism in the area of sound, and justly renowned for effects created by lighting director Candace Brightman, the technology-conscious band decided that the video portion of the GD concert experience wasn't up to their standards.

These days most self-respecting rock 'n' roll groups hit the stadium tour circuit with a dazzling array of techno-toys designed to enhance the concert experience—lights, videos, animations, and graphics add new dimensions to the music itself. Even for unfortunate audience members a football field's length from the musicians, technology goes a long way toward creating a compelling show.

But a Dead show presents unique problems for a video crew.

Says Grateful Dead video director Bob Hartnett, who's previously toured with the likes of Janet Jackson and ZZ Top, "Whereas

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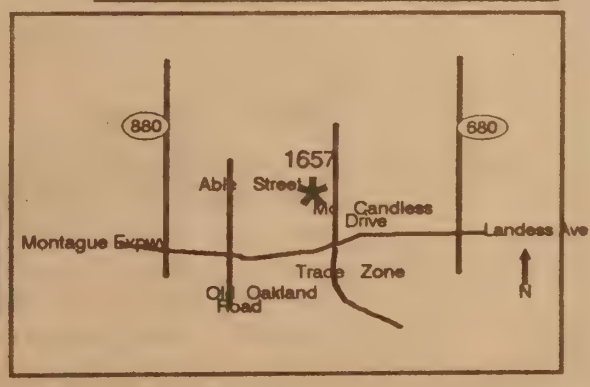

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Inventor examiner view of bassist Phil Lesh, scanned in 3-D.

most tours are highly choreographed, right down to the seeming ad libs, here it's totally improvisational all the time."

The Dead have a working repertoire of around 250 songs. Nearly one hundred times a year, they walk onstage with no very clear idea of what they're going to play that night. It will probably not include anything they played the night before—six-day runs with only three songs repeated are not uncommon. New songs appear without warning. Consequently, says Hartnett, "It's really hard for us to bank or pre-store effects, pre-produce material for it, because on any given night, any song could follow any other song. So that aspect is really challenging."

Not only that, the Deadhead audience is none too receptive to the prefabricated. For one thing, many of them work in technology fields and are quite familiar with the state of the art. For another, unlike other fans who are content to catch the Madonna tour when it comes to their home town, Deadheads *expect* every show to be different, and travel a good deal in order to catch as many concerts as possible.

"Night to night," Hartnett explains, "we have a lot of the same audience. They have such a loyal following—we can't do the same thing twice. What gets cheers on one night is commonplace the next night, so we have to constantly reinvent and redo the way we do each individual song."

SKULL AND IRIS

Hartnett, a free-lance video professional based in San Francisco, spends most of his time working in live concert video, usually in conjunction with Bill Graham Presents at the Shoreline Amphitheatre in Mountain View, which has its own dedicated video system. But he says it was his work in broadcast video—MTV, VH-1, CNN, Satellite News Channel, and CNN Headline News, where he was design director—that attracted the Dead, who were especially interested in effects and show design. "They wanted to bring video up to the same state-of-the-art level that their lighting and sound have always been," he says.

He laughs, "There was so much technology available, because so many Deadheads are into high technology—computer design, NASA... So I started trying to find out what freebies we could have!"

Meanwhile, across the street from the Shoreline at Silicon Graphics, another of those fabled SGI under-the-table projects was in full swing—an attempt to develop a computer system for rock 'n' roll touring. SGI's Ron Fischer had been working with percussionists D'Cückoo, and when D'Cückoo opened the Dead's Mardi Gras show in February, lighting director Candace Brightman asked him to keep the equipment set up and do graphics for the Dead's set. Everybody liked the result.

And so, for the June tour, SGI lent the Grateful Dead a top-of-the-line system: a 4D/420 VGXT workstation, with two CPU boards with MIPS processors running at 40MHz, lots of RAM, and lots of disk. Along with the system went operator and programmer David Tristram, a former NASA employee. After a pair of shakedown shows at Shoreline in May, Tristram and the Iris went to Buffalo, New York, Washington DC, Chicago, and Columbus.

Within hours of the first Shoreline shows, the nets were abuzz with talk about the new computer video. Tristram was combining live video from the stage with footage from videodisk, and adding effects created by ElectroPaint, a real-time paint program he'd written, and Dancing Marionette, a program written by Fischer using the Iris Inventor toolkit.

"What we do is pretty much generate live computer animation in real time," explains Harnett. "Before, the Dead had used something called a Fairlight, which is kind of antiquated at this point—it was sort of a disco early-graphics-station paintbox kind of thing. But the VGXT workstation from SGI is much more sophisticated in terms of application and output. All the psychedelic overlays that we use to layer in keys during the performances are generated in real time, with the operator, David Tristram of SGI, pretty much jamming video-wise when the band jams onstage music-wise.

"It's a rather sophisticated arrangement. We needed to go through a bunch of different decoder systems to get the one that really lets us time the SGI gear to the switcher, so we can interface it with the various other elements of the show—cameras and tape decks and laser discs and all that kind of stuff.

"We ended up using a Grass Valley encoder and decoder. Basically the computer puts out a component signal, and we're using an analog system, so when we're going out of the computer into our system we have to go from component to composite into our system. And then to input stuff that David can grab and treat—camera pictures, or tape pictures, or anything like that—we have to go from composite on our end back into component to get it back into the SGI computer.

"The SGI computer is really fascinating, because he can designate a portion of his workscreen as a standard television NTSC 525-line output. He can designate any part of his monitor as the output that we're seeing in video. He can move that area around so we can center things and position things. Then we also use it to capture stills during the show—pick up a still picture and save it, that we'll put up in between numbers during a blackout. So we're getting a lot of mileage out of that one box."

MORPHING IN THE BAND

The real crowd-pleaser among the effects seems to be a morphing sequence in which the faces of the musicians melt sequentially into each other. Creating the sequence was a large collaborative undertaking, and involved a visit to SGI by the band members to have their heads scanned for a database.

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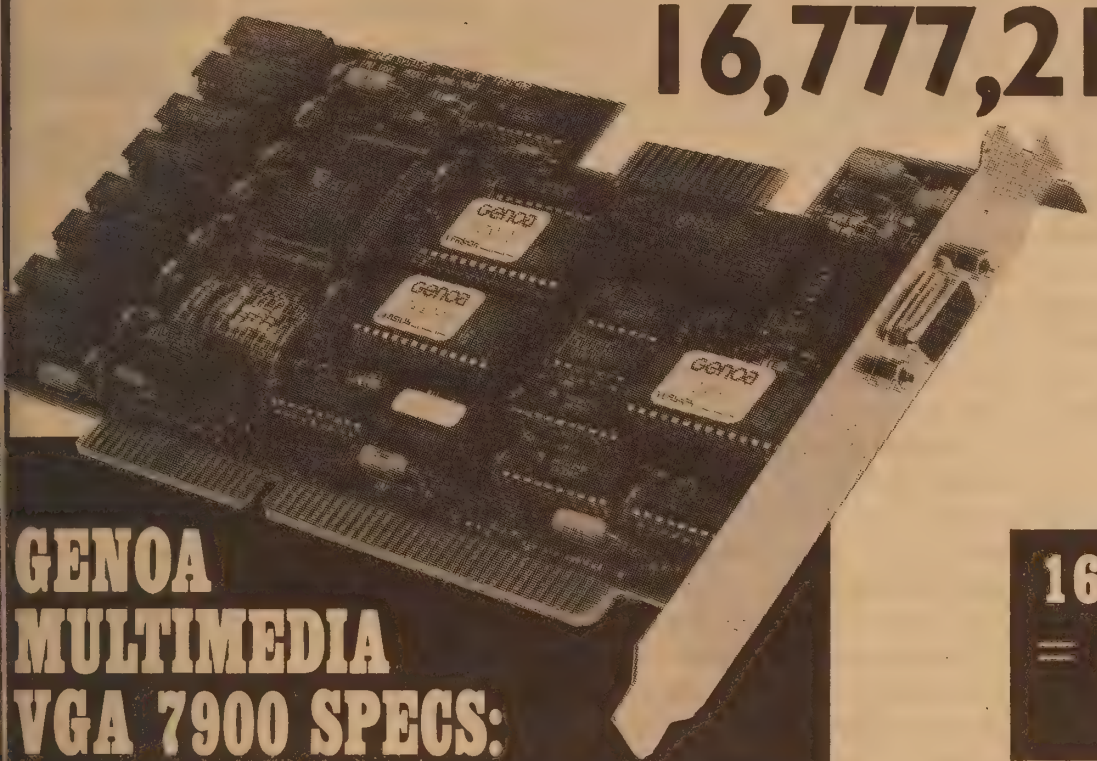

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still for seventeen seconds, and a 3-D camera goes around you. And instantly what pops up on the screen is a three-dimensional model of your entire head, with a photograph of your face from every angle texture-mapped onto it. We've had lots of people do it now, so we have this database of all of our heads. What we're going to *do* with it I haven't the slightest idea...but we have this library now.

"It's amazing that in seventeen seconds you can have this image on the screen that you can then move around with a mouse and look at it from different angles. The resolution's as good as a photograph. As good as a video camera photograph, of course."

The three-dimensional camera is the product of Cyberware Laboratory in Monterey. The camera is connected to a PC, which is in turn connected to an SGI 4D/220 workstation with 40MB of RAM, VGX graphics, and two CPU boards with MIPS R2000A/R3000 CPUs running at 25MHz. Graphics transformations are done in hardware, which supports anti-aliasing, motion blur, depth cuing, and texture mapping.

Explains programmer Jeanne Rich, who took existing software created with Iris Inventor by SGI's Thad Beier and Gavin Bell and enhanced it for the project: "The scanner projects a beam of red light, which the scanner uses to pick up the 3-D information and the color along the beam of light. As the camera moves around the subject, it continues to pick up the longitudinal information, and from this a 3-D quadmesh can be determined.

"If you look at the wireframe of the model, you see four-sided shapes. A quadmesh connects the four-sided shapes together to create a model.

"The color information picked up by the camera is mapped onto the quadmesh. Various Cyberware products which run on the SGI system are used to clean up the data. Once the quadmesh has been cleaned up, a program is used which registers the color data so the heads can align—that is, for each head, the eyes, ears, nose, and mouth are in the same location. From this, a 40x40 quadmesh is created, which can be used for morphing.

"The morph program allows control of the animation, that is, control of the change of one head to the other. The user can change the transition rate and manually control the morphing. A sequencer allows changing the objects selected for morphing, and the process is viewed though an Inventor examiner view which allows the user to rotate and translate the object in real time. Rotation can be made to operate without user intervention. The user can also zoom in and out on the object."

The data and programs used to generate these effects are quite large and reside on the workstation's hard disk. However, in order to keep the effects smooth and seamless, they are running in memory. Consequently a system designed for this purpose tends to have a lot of RAM, usually at least 60–80MB.

FURTHER

"It's certainly a unique concert situation," says Hartnett. "The Grateful Dead are unlike any other band in the world. The crowd is so in tune with them that they pick up on every single nuance of the performance. So it's keeping us all on our toes. Everybody's constantly pushing each other to go a little bit higher, just in terms of our output. With a fan base that's so loyal and that follows every single element of the show itself, we're hoping that video will go along for the entire tour at some point."

Plans for the future include a number of projects to take further advantage of the Iris system's capabilities. Not surprisingly, Son of Morph is high on the list.

"The band really got into it," Hartnett says. "In the long run, we're hoping to scan the band in completely, so we have a computer model of all of them. We'll go back in and do their whole bodies. Eventually what we want is an animation character for each member of the band, and looking further down the line, have them be able to do interactive video, so they could actually interact with the combination of what we put up on screens and the animation we're generating."

He's also working with lighting director Brightman to achieve interesting new combinations of computer effects and conventional lighting tools. "Candace wanted to start using video on the floor, probably starting off small with playback and effects, and then gradually building up.

"All the elements are working together. The lighting, the sound, the staging, the video. What we're trying to do, and I think we're doing a real good job now, is creating one whole palette. With Candace's lighting, she involves everybody in the stadium in the show. There's a lot of lighting effects designed specifically for the crowd—lighting different parts of the audience, really bringing everybody into the performance and making the entire arena part of the set.

"We shoot out into the back of the hall, following light trails as they go back into the audience. The other night in Giants' Stadium, it was a full moon, so we were getting moon shots and incorporating them into the show. The Deadheads are both a colorful and an enthusiastic bunch, so we've been trying to get more pictures of them up on the screens, drawing them into the show further.

"At its best, what I'm doing on video is complementing what the lighting is doing, which is complementing what the band's doing. It's trying to be one cohesive unit that has one head and three hundred arms, and it's really a challenge to do, night to night. But this is actually the most fun gig I've ever had." ■

Video director Bob Hartnett: "Before, the Dead had used a Fairlight, which is kind of antiquated at this point. But the VGXT workstation from SGI is much more sophisticated in terms of application and output. All the psychedelic overlays that we use to layer in keys during the performances are generated in real time, with the operator pretty much jamming video-wise when the band jams onstage music-wise."

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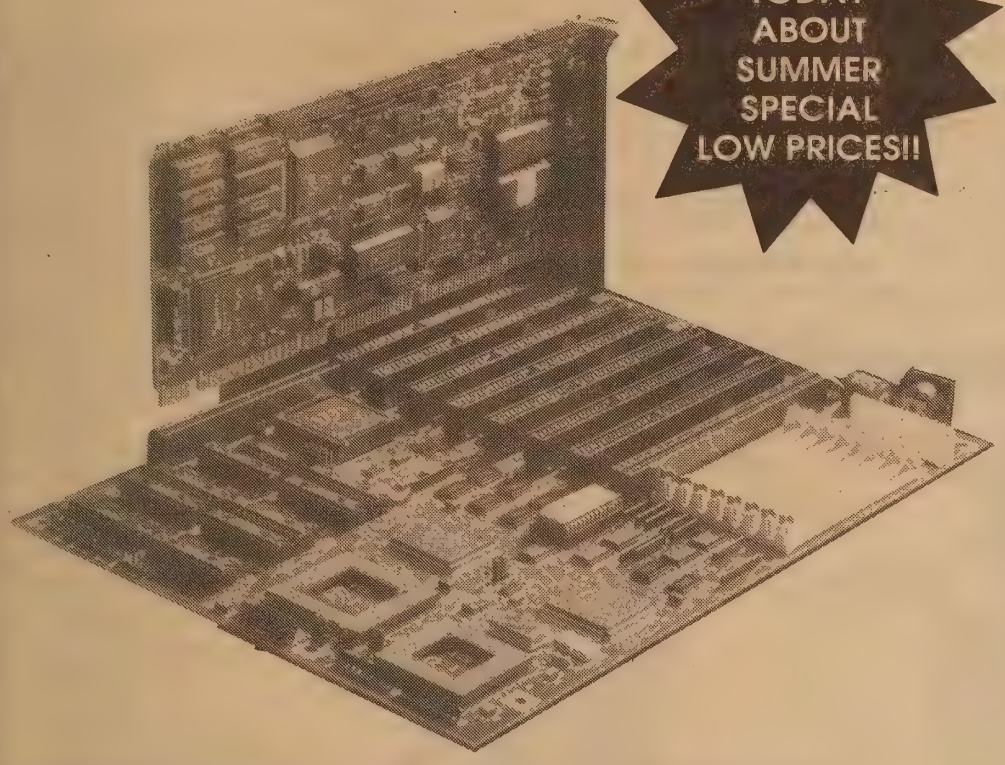

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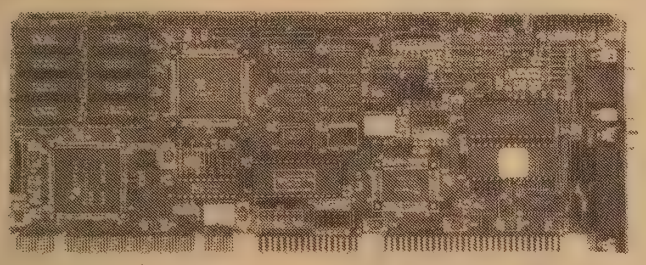

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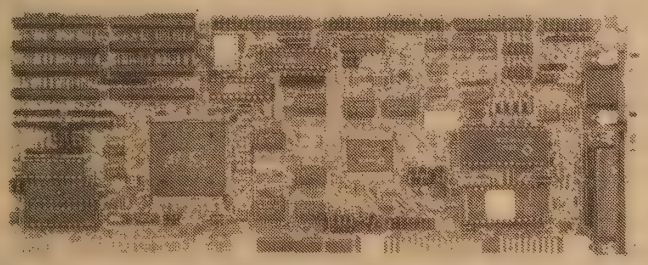

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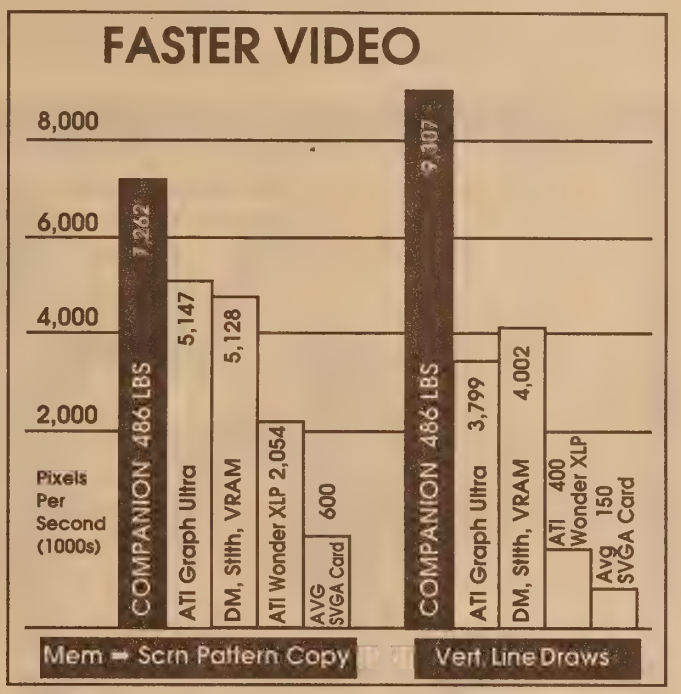

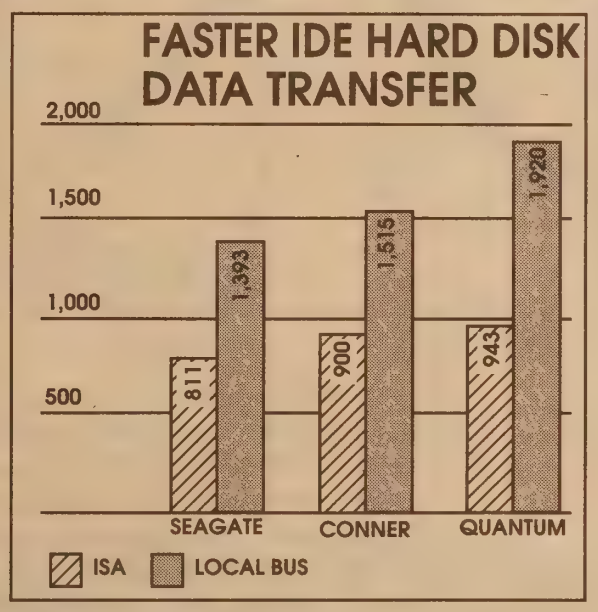

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Eyeballing Multimedia

Secrets Of The Residents

BY TONY REVEAUX

Most bands are lucky if they've lasted two years. The Residents are celebrating two decades of music, art, graphics, performance, film, video, and computer-aided multimedia.

The Residents, a Bay Area art/rock performance group, have maintained the integrity of their anonymity for twenty-very-odd years.

Trucking along in their spooky-cute top-hatted eyeball masks or other cloaking garb, they continue to confound the very core thesis of rock and roll—the narcissism of personality.

The Residents have developed a uniquely surreal look-and-feel, expressed by their major-minor chord changes supporting inventively characterized lyrics, with moods bolting from antic-frantic rhythms to echoing reverbs of wistful melancholy.

LASER TALES

From the very beginning, The Residents have been as much visually motivated as musically driven. In their compulsion to materialize the worlds of imagination explored in their music, they went from designing costumes, props, and staging effects to pushing the envelopes of emerging technologies. This was as much due to low-budget artists' constraints as to their irrepressible hacker curiosities. The EyeBoys' labyrinthine studio is strewn with the husks of obsolete hardware and archaic paraphernalia. To examine the careen ing careers of The Residents is to witness the creative realization and utilization of what we are now calling "multimedia."

The Voyager Company has met the challenge by issuing the first Residential videodisk. *Twenty Twisted Questions: Two Decades of Anonymous Art 1972–1992* ($49.95) is sixty minutes of orb-boggling performances, videos, visions, animations, computer graphics, and other unclassifiable acts emanating from that zone located somewhere between our left and right brainsides.

EYEBALL-TO-EYEBALL WITH THE RESIDENTS

I met with The Residents in the subterranean grottos of their South of Market lair, voices muffled by their trademark head masks consisting of those giant eyeballs with the jaunty top hats.

The Residents started using computers early on beginning with Apple IIs, for designing their own record labels, album covers, posters, novelties and t-shirts, and for managing their business, including an online bulletin board for their fans. Says one Resident, "We were publishing the Ralph Records catalog in the early '80s; desktop publishing already—even though it was all printed out from dot matrix printers. We used a Commodore 64 to do the cover of the *George and James* LP record, and actually did the color separations on the computer hooked to a TV set for a monitor and used a camera to photograph the screen. Of course, when it was put back together, the chunky dots didn't register at all—but that's all part of the design. For other things, we were renting 512K Macs. We didn't buy one until the Macintosh Plus came along.

"We were working with a KoalaPad with a Commodore 64 creating designs and then shooting directly off the monitor with a 16mm camera. In *The Mark of the Mole*, we used Kodalith film to get sharper black edges of masks, and the actual objects that moved on the screen were animated (in stop motion) across the screen.

"In the early '80s—when we were still Apple II-based—the Mindset computer was introduced. For us it was a dream come true. It output video directly through an actual NTSC output—something we Mac users are still screaming about—so that we could record directly to video, and it was designed as a

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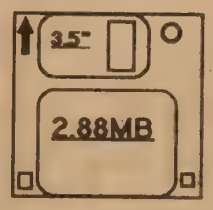

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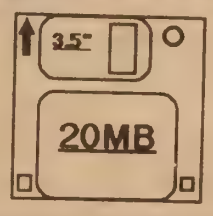

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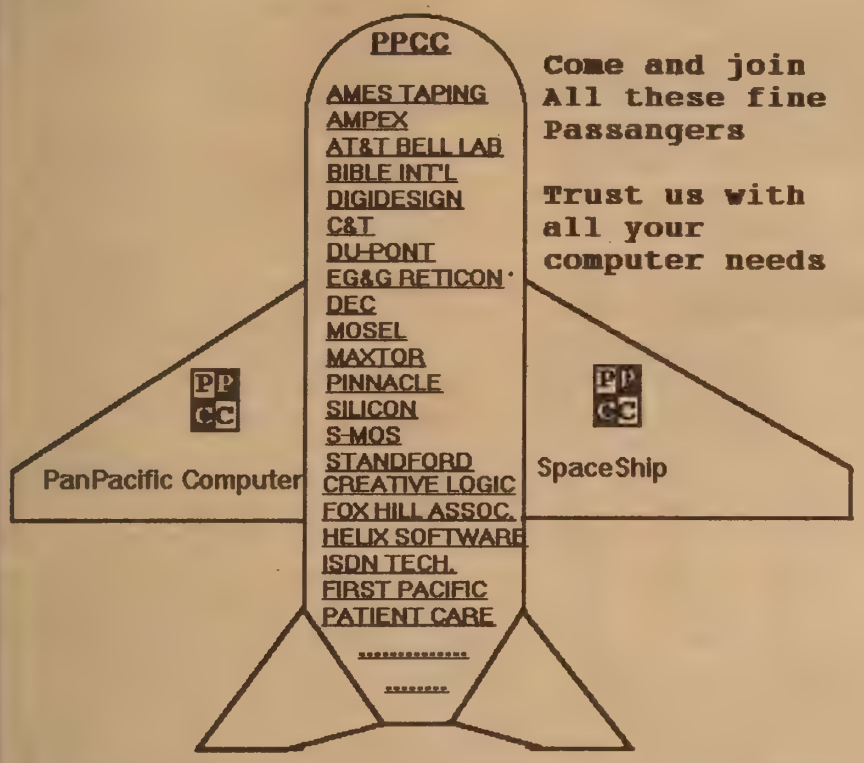

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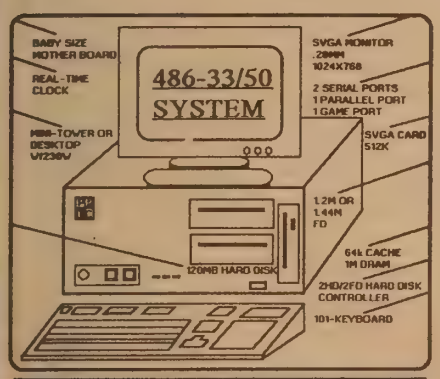

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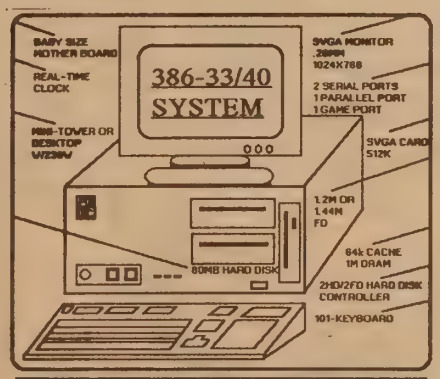

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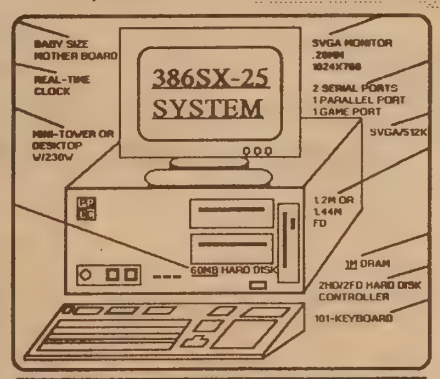

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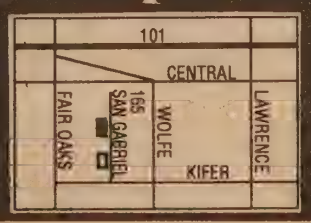

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multimedia device. It had its own operating system but could also run DOS, and was bundled with an early version of Lumena.

"*Man's World* (1984) was done using the Mindset. Most of the animation that is created on it is the result of color cycling, and there was very little else really going on. Most of the final result was done in postproduction, with things dissolving and crossfading on each other. *Man's World* was paid for by Warner Brothers; they gave us $10,000 to make a video, and we spent the first three on the Mindset. But that machine never took off and it wasn't supported very well."

Earth vs. the Flying Saucers (1985) was totally computerized. "The San Francisco Production Group had just gotten this early high-end [Qantel] Paintbox system, and no one knew how to use it yet. We had this proposal for doing a piece with extracting frames and coloring them and altering them and doing tricks with them and turning them into something else." Key scenes and clips from the black-and-white 1956 Columbia sci-fi feature were wildly colorized and reanimated by the tireless EyeBallers.

Don't Be Cruel (1990) is a desktop video done in MacroMind Director. "But even at this time, it was really challenging the system. As simple as it may look, it was really all that could be done at that time. It is graphic arts done with scanning images and totally manipulating everything. There was no footage shot for it or a camera involved in it."

With a rueful collective sigh, The Residents recall, "Every video that we've ever done for a record company has been rejected."

THE MAKING OF "HARRY THE HEAD"

Freak Show, their latest music release (Official Product 1.2), which includes "Harry the Head" (seen in Chapter 10 on the videodisk), was created entirely on the Macintosh and mastered directly from the Mac to compact disc—making The Residents the first to actually do what the technology had been promising.

Jim Ludtke's Mac-based 3-D animation has been seen on the small screen in "Nick at Nite" intros and commercials for Nintendo, and his stunning Mac-based 3-D illustrations grace the pages of slicks like *MacUser* and *Desktop Communications*. He had met The Residents in New York and lent a hand with the postproduction of the Residents' *Eye Scream* project.

When Ludtke received a dub of *Freak Show*, he became "psyched" enough to want to work with them on an animation project based on the "Harry the Head" track. He developed a storyboard which followed the lyrics: a stage opens its curtains to reveal weird sideshow freaks, and the camera flies down stairways and corridors to a room where Harry, a head-in-a-jug, paints with a brush in his teeth and a tear in his eye. Other characters—tragic glitches of human form—are also seen, if not believed.

Ludtke didn't need a Harry (digital editing system) to produce "Harry the Head." Nor did he use an Apollo, a Sun, or an Iris Indigo. It was a Herculean effort, but he finished almost two and a half minutes of eyeball-popping 3-D graphics animation on a Macintosh. "It was a bunch of Macs, actually," he admits.

The powers of the Macintosh animation and multimedia environment continue to

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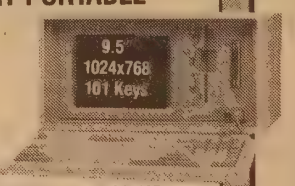

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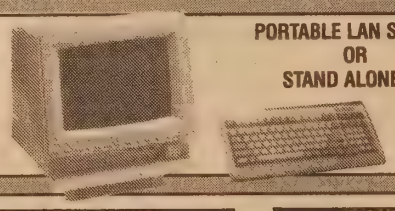
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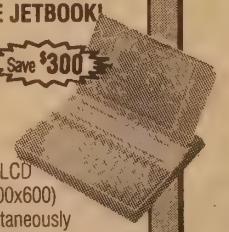
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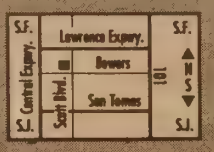

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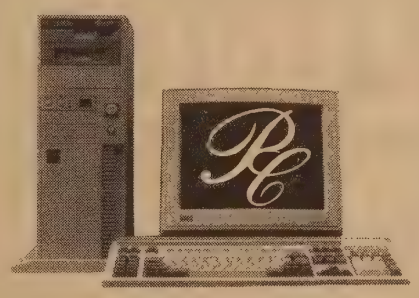

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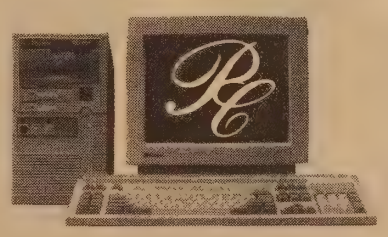

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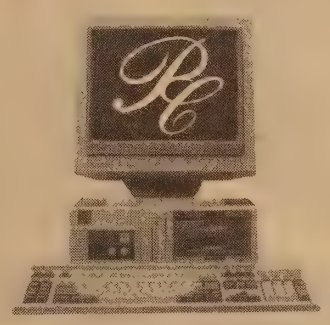

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grow, just as graphics-dedicated workstations become more affordable and easier to use. But how high can the Mac jump when pushed? Here is a pre-Quadra quest that succeeded in conjuring up a dream from the desktop.

First Ludtke sampled the song so he could look at it in terms of a time line. Macromedia's MacRecorder was used to create a low-grade sample displayed in 1/30-second units to mark where events in the song occurred in terms of video time. The creatures and environments were built in Macromedia's Swivel 3-D, and test animations were run using its Tween feature, with the PICT files imported into MacroMind Director.

Since Swivel is not designed to create things like the front wall of the stage, which had a large, irregular hole and doors cut out, Ludtke chose Sculpt 3D (Byte by Byte). These models were then imported into MacroMind ThreeD, and placed into position. To create texture maps for surface characteristics, such as wood grain and brick, he used Adobe Photoshop to create and then save the images as 24- or 8-bit PICT files.

He prepared all the files on a Mac IIx with a Daystar 50MHz accelerator, and used Virtual software from Connectrix to get a little more memory. Then he shared the rendering tasks with a few other Macs: a IIx, a IIci, a Mac II, another IIx, and a neighbor's Mac IIfx. These machines worked around the clock seven days a week, with pauses to offload files or attend to the inevitable crashes or memory errors. All the Macs had different clock speeds, so the render times varied. Even though the frames were rendered out to a half-size window (320 x 240), the render times per frame ranged from twelve minutes at best to as much as forty-eight minutes.

Freak Show was created entirely on the Macintosh and mastered directly from the Mac to compact disc—making The Residents the first to actually do what the technology had been promising.

"I like to use Macromedia's FilmMaker," says Ludtke, "because you can resize things and send them back and forth in z-space, make them look transparent and fade into the background." That's how the effect showing angels flying up the stairs was accomplished. He copied the animation onto several channels, each with a different level of transparency, creating a "strobe trail" effect.

The rendered frames were exported as 24-bit PICT files and saved on 42MB Syquest cartridges. Nearly fourteen cartridges were filled with data, and the project took more than five weeks to complete. The cartridges and a rented Beta SP deck were brought to a

Continued on page 236

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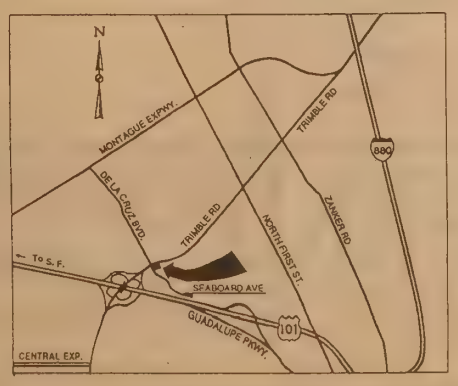

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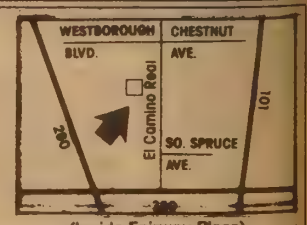

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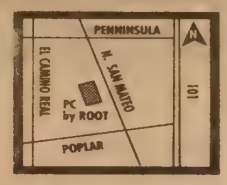

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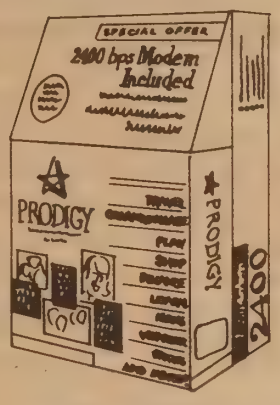

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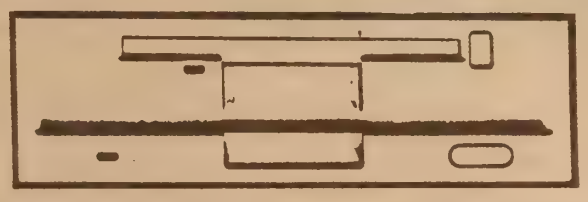

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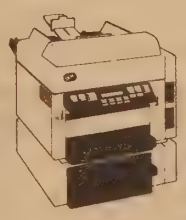

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Talking To The Mac

And Other News From The Developers Conference

BY DAVID MORGENSTERN

Our family braved the Haight Street Fair the other day—the Summer of Love street. I will admit to not wearing my BMUG tie-dyed T-shirt to the event. This was not out of a worry that I might be out of place, because the shirt that reads *the BMUG T-shirt: Tie-dyed in Berkeley by Deadheads* is always in fashion. Instead, I feared that I would blend in too closely with the ubiquitous tie-dyed clothing worn by the natives of the district.

I settled on the gray 1991 Boston Macworld Expo shirt that displays a BMUGer leaping across the globe, thinking that it would be both acceptable and noticeable. As we joined the teeming throngs, I found that my strategy worked perfectly. I met a half dozen sunburned BMUG West members and a couple of groovy Macintosh developers enjoying the fusion jazz/rock/something-or-other. Summer in the City and BMUG—the perfect combination.

TALK IS CHIP

Everyone's favorite Star Trek movie scene is when Scotty picks up a Macintosh mouse and begins speaking commands into it. If only computing was that easy in real life! The technology of speech synthesis and recognition is the most intriguing for the casual user. Macintosh programmers were shown the near future at the recent World Wide Developers Conference (WWDC) in San Jose.

BMUG

Casper is the code name for Apple's speech recognition technology. John Sculley showed it on television, so it's not a deep dark secret. Unlike other products around for the Mac and other computers, it has the ability to handle continuous speech instead of being fed each word one at a time. It also is speaker independent, meaning that it does not have to be trained each word by the user. Say what?

The speaker-independent software uses mathematical models of words derived from the voices of hundreds of people. You don't have to spend so much time training it, since it has already "learned" the different ways people speak. The designers sampled the voices of people around the Apple campus, having them read a few hundred business- and Mac- oriented phrases. The voice donors received a T-shirt printed with the phrases "I helped the Mac recognize speech," and "I helped the Mac wreak a nice beach." Puns give speech recognition fits.

A few years ago, Apple warned developers that the ancient speech synthesis software, MacinTalk, would no longer be supported in future operating systems. It was originally programmed on a contract basis so that the first 128K Mac could introduce itself at the rollout. In typical fashion it said, "I am Macintosh," and then proceeded to put down IBM mainframes. The software doesn't work under System 7, to the dismay of chattering Mac fans.

Attendees of the Noise 101 session at the WWDC saw the plans for the System 7 Speech Manager and the new MacinTalk II. Several versions of MacinTalk II were shown that ran under different memory requirements: a low-quality version taking up around 100K and a better-quality one claiming 1.5MB. The demonstration compared the old MacinTalk, DECTalk, and MacinTalk II. The new MacinTalk sound was compared favorably to DECTalk, which is a $4000 program!

The combination of these speech technologies will give additional flexibility for ordinary people to use the data on their computers. You could call your computer on the phone and tell it to perform some actions. It would verify its instructions by reading back your commands over the phone. You could get your data read to you right there or have it send a fax to your office. Since these technologies work in the background, you could have it read you your electronic mail while you're doing something else useful—like watching the baseball game on the monitor.

Also shown (or heard) was the next generation of speech synthesis software, code named Galatea. Galatea was the statue that the goddess of Love brought to life for the sculptor Pygmalion. The male and female Galatea voices were judged the best, and had all kinds of intelligent features. The software knew all about grammar and punctuation, giving various inflections depending on context. It could correctly interpret the difference between Dr. (Doctor) and Dr. (Drive), or the noun/verb differences in "I will record a record." This neat technology will also need to eat a lot of processor time, so here's another reason to start saving for a really powerful machine.

This is exciting stuff, but don't bug your dealer when you don't see it on the shelf anytime soon. The rumored 1993 release Digital Signal Processor flavored "Cyclone" Macintosh model may have a Lite version of the Speech Manager in its 2MB ROM. The old saying goes, "Speech is hard, but who can keep quiet?" Now your computer wants to get in the act.

When boarding an airline flight, remember that you'll need to demonstrate that it really is a computer, and not a fancy shell filled with plastic explosives.

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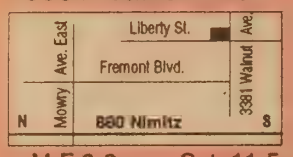

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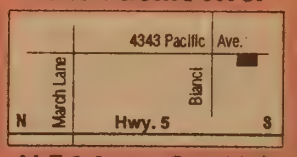

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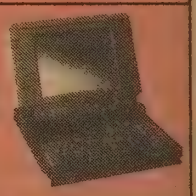

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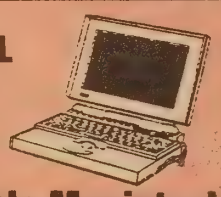

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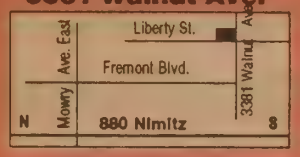

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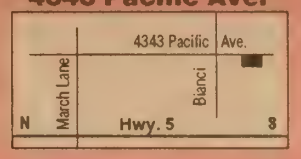

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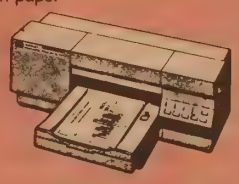

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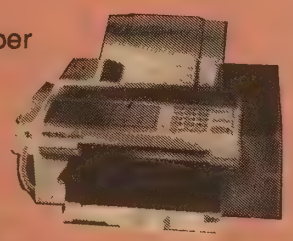

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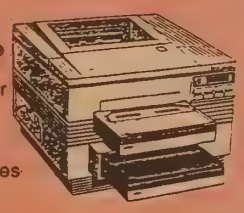

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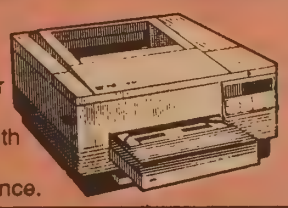

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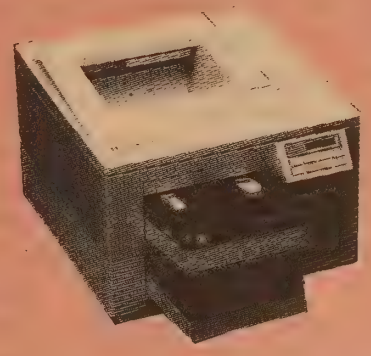

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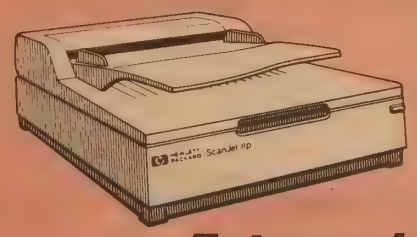

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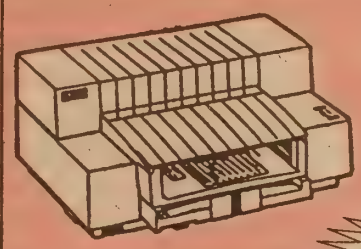

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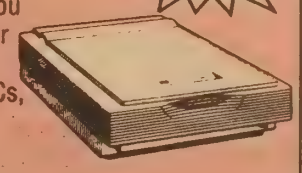

The new HP ScanJet IIc gives you 256 levels of gray or 24-bit color professional quality documents. Supports IBM AT-compatible PCs, MicroChannel or Macintosh personal computers

HP 1MB RAM Only $79

members do not necessarily meet at the BMUG office, but depending on the weather, hang out in public parks and local brew pubs to talk about computing on the go.

Although most of us are not lucky enough to have a PowerBook, we probably know someone who can't leave the house without a computer. Here are a few things to keep in mind if you're a PB SIG groupie or notebook wannabe.

• PowerBooks make poor frisbees. Too many owners have seen their notebooks fly out of their hands and crash on the floor. This recently happened to a BMUG member while bringing the fresh-out-of-the-box toy into work for show-and-tell. If you must carry the PB around without a padded case, get a good grip on it—you can't hurt it by squeezing it tight! You *love* your PowerBook, right?

•Theft is also a major problem for PB owners. We've had them taken from under our noses in bookstores and libraries. If you're not going to keep the computer in a custom bag hanging from your shoulder, consider the more-is-less solution. Purchase a large bag that can hold everything you own. I use a super-strong "medium" Eddie Bauer bag that can easily hold a Macworld Expo's worth of handouts, jacket, and books, with plenty of room to spare for technology. Out of sight, buried deep in the bag, is out of mind for your techno-thief.

• When boarding an airline flight, remember that you'll have to get your notebook through airport security. As with any portable computer, you need to demonstrate that it really is a computer and not a fancy shell filled with plastic explosives. Booting it up in front of the security guards is usually enough persuasion.

Some international airlines go beyond the simple boot-up test. They may seem to take the machine apart; however, people that have experienced this procedure claim that the officers appear to know what they're doing. Make sure that all spare batteries are charged up ready to go, since you may have to prove that they work too. In any case, you will want to use them on the flight instead of being forced to watch the awful in-flight movie.

• The PowerBook built-in trackball design has a real edge over many of its PC notebook cousins when traveling by air. It seems that a number of airline companies are stopping passengers with PC portables, and warning them about using the machines onboard the airplane. It seems that the computer itself is not a problem, but the various flavors of mice that are used with these systems.

The problem is with shielding for radio noise. Almost all electrical devices radiate a rich mixture of electromagnetic sludge. You've probably heard this racket in the mornings if you grind your coffee near the radio. Computers and other fancy electrical devices use various shielding schemes to prevent this from leaking out. The CIA can supposedly pick up the signals your keyboard generates across the street, so they require spies to use extra heavy-duty mummywrap protection, known as Tempest certification.

While the portable computer may be shielded, the mouse is usually not shielded. In high school, we learned that a long piece of wire dangling out the back of a radio helps reception—and broadcast. The mouse cord acts as an antenna for all the noise carefully shielded away inside the computer, allowing it to interfere with the airplane.

BMUG physicists inform me that the mouse acts as a radiating antenna at frequencies which are harmonics of the CPU or bus, depending on the design. Since the clock speed is typically in the 8–24MHz range, the generated harmonics fall into the radio spectrum used for aircraft navigational devices. Playing the harmonica may disturb your fellow passengers, but a mouse playing harmonics will disturb the pilot.

• A frequent question on the BMUG telephone HelpLine has been the trouble that some PowerBook models have had reading some floppies. There are a pair of answers to this strange problem.

It was discovered that the PB floppy drive didn't like the way some machines format 800K disks. These are commercial disk-duplicating machines that seem to format disks a bit differently than regular Macintoshes. The usual workaround for the problem was to take the disk over to another non-PowerBook Mac and copy the files onto a "regular" floppy. The drive controller firmware needed to be fixed and now Apple is offering a swap for problem disk drives. The new improved mechanisms are called Rev B drives and are available from Apple dealers.

The other problem is that the PowerBook 140 disk drive is not properly shielded from a component that handles the display backlighting. It's the same electromagnetic interference problem we saw in the airplanes, but here it's inside the case. The design was changed last winter, but many units shipped with the inadequate design. Apple will install a better shield at no charge to early PowerBook owners, but you can also try switching off the backlight when you come across a disk that can not be read correctly.

These two PowerBook specific problems are compounded by the fact that all FDHD SuperDrives on all Mac models are susceptible to dust buildup problems. There's more dust to find its way into your drive out on the backpacking trail, or on the bottom shelves of an academic library, than on your normal desktop. All Mac owners, and especially PowerBook users, should regularly clean their floppy drives with some compressed air and a dust buster.

If you're having troubles with your PowerBook floppy drive, you should call the repair hotline setup to field the questions. The number is 800-767-2775.

• Many users like the new startup sound of the PowerBooks and Quadras, but in a crowded lecture hall it can sound disturbingly loud. Attempting to counteract this, some poor users have tried turning the speaker volume down to zero, which

Everyone's favorite Star Trek movie scene is when Scotty picks up a Macintosh mouse and begins speaking commands into it. If only computing was that easy in real life!

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E-Machines NEW! T-16 II/SX-8 Trin. Sys. 16" Trinitron w/8 bit accelerated video board. It's upgradable.	$1699.
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makes it even louder than before! Unfortunately, if the sound is off, the startup sound defaults to a mid-range setting. A setting of one or two will be quieter than zero. Total silence can be achieved by putting an old earphone plug in the audio-out port.

SHAREWARE SPOTLIGHT

Tim Holmes, BMUG ShortStop and staffer, has put together a special disk for PowerBook users. It's filled with utilities, information, and other notebookworthy goodies. There's InUse that lets you know when your hard disk drive is being accessed. This is essential feedback to help you fine tune your battery saving techniques.

Another useful utility is the BackLite CDEV that will turn off the backlit screen at set intervals. Apple engineers have told BMUG that the backlit screens are only rated for a couple of years' use. When they go bad they will need to be replaced—at a considerable expense. Turning the display off when you don't really need it will save your battery and extend the screen life. It's available from the BMUG office for $4 plus postage and handling.

Continued on page 260

UPCOMING EVENTS:

July 2 Articulate Systems—Voice Navigator software.

July 9 Knowledge Revolution—Interactive Physics II; Silicon Beach Software—New Product.

July 16 Global Village—TelePort modems and software; Mirror Technologies—Drives and displays.

July 23 Nolo Press Living Trust legal software.

July 27 BMUG West at Exploratorium museum in San Francisco— Adobe Premiere, desktop video software.

July 30 Gold Disk—Surpass multimedia desktop presentation software; Media in Motion—Animation clips, training for Macromind Director.

Call the the BMUG Announcement Line for the latest information on the new BMUG South meetings! 510-849-9114.

To get some further information about BMUG please write to: **BMUG**, 1442A Walnut Street, #62, Berkeley, CA 94709. If you prefer to phone our business office call (510)549-BMUG, or FAX(510) 849-9026.

CREATIVE TOOLS

Continued from page 226

Macintosh-based video service, where MacVac software and hardware were employed to send the numbered PICTs to the Beta SP deck, one at a time. The animation was shot on "twos," at 30 frames per second. The half-size renders were enlarged to full frame using a scan converter, which also softened any extra aliasing occurring during the enlargement process. The original tapes were sent to The Residents, and they completed the final edit using Ludtke's notes as suggestions.

20-20 HINDSIGHT

What would he do differently today?

"I would probably use some different software, like Electric Image," says Ludtke. "I am using it almost exclusively for my texture mapping and renderings now. After doing a project like 'Harry the Head,' it's really important to get more speed. To render one frame of 'Harry' took between fifteen and forty-five minutes. With Electric Image, the time would have been between four and six minutes. Its lack of an overview is a significant shortcoming, however.

"Going to a graphics workstation like an Iris Indigo would be great, but the Mac is what I have now, and I like to see what I can do with what I have—and I like the results from what I'm doing."

Ludtke Design has relocated to San Francisco (415/863-6187). "The thing that I am most excited about in leaving New York and coming here is [working on] future projects with The Residents," says Ludtke.

GOING OPTICAL WITH THE RESIDENTS

Also on the laserdisk is "Ty's Freak Show" (1991), the famous live performance of *Freak Show* that was seen as a surprise event at the CD-ROM Multimedia Conference in San Jose last year. Brainstormed by Ty Roberts of Light Source, it was sponsored by NEC as a rollout of the NEC Video Sequencer, which uses software by Light Source to control two NEC PC-VCRs for postproduction. With Hi-8 cameras inputting to a Video Toaster, Todd Rundgren jockeyed the feeds to provide the live mix for the original footage.

"Our whole operation is computerized now," say The Residents. "Hard disk random access digital recording, MIDI interfaces—a state-of-the-art system. We're now beta testers for DigiDesign, and we work with OpCode's StudioVision. We're doing a new CD-ROM with Voyager, and Jim Ludtke is helping, based on our new *Freak Show* comic book, with a real wild interactive 3-D interface exploring the realities of the freak characters."

They add, "We're still really pushing the edge of the envelope hard!"■

To render one frame of 'Harry' took between fifteen and forty-five minutes. With Electric Image, the time would have been between four and six minutes.

RESOURCES:

Twenty Twisted Questions: Two Decades of Anonymous Art 1972–1992, $49.95
Laserdisk (CAV)
60 min. color and black & white

The Voyager Company
1351 Pacific Coast Highway
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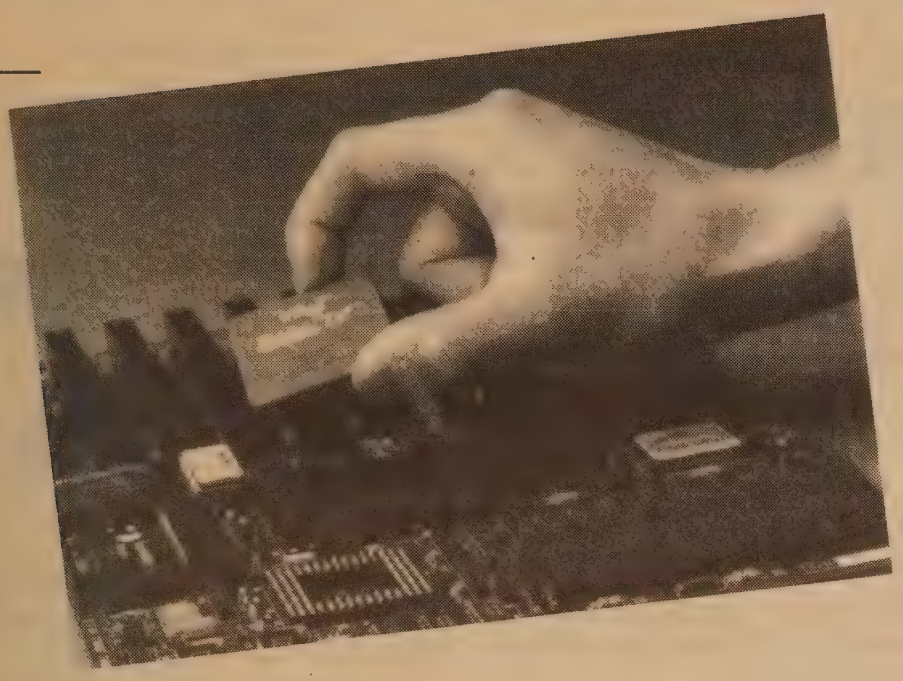

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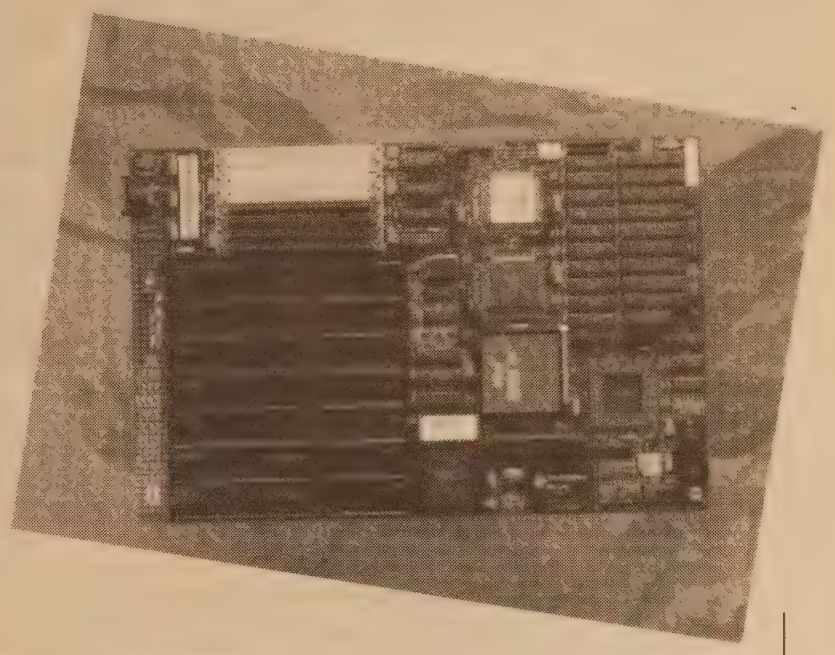

Everyone claims their motherboards are simple to upgrade but then you find out about the expensive upgrade modules or the special tools needed for prying the CPU out of it's socket. Don't get the CPU upgrade blues!!

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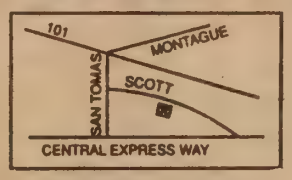

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RESOURCES

Calendar Of Events

JULY

July 6 Intro To Windows 3.1 Class. Berkeley. Computer Link. Call: (510)540-8283.

July 6–10 International Conference On APL. St. Petersburg, Russia. ACM, FinnAPL, & SIGAPL. Call: Lynne C. Shaw, (212)836-8644. Email: Lynne_Shaw@mts.cc.wayne.edu.

July 6–17 Music Printing With Small Computers Class. Palo Alto. Stanford University Dept. of Music. Call: (415)723-4971.

July 7 Beginning PowerPoint Class. San Francisco. Abacus Training. Call: (415)759-2481.

July 7 Intro To Networks Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

July 7 Intro To The Macintosh System 7 Class. San Francisco. Abacus Training. Call: (415)759-2481.

July 7 Intro To Word 2.0 For Windows Class. Computer Link. Berkeley. Call: (510)540-8283.

July 7–10 Informix Worldwide Users Conference. San Jose. Informix Software. Call: 1-800-247-0262.

July 7–16 Intro To C/C++ Programming Class. San Francisco. Noe Valley Computers. Call: (415)824-1376.

July 8 Intro To DOS Class. San Ramon. MicroTek. Call: (510)831-8075.

July 8 Intro To Excel 4.0 Class. Computer Link. Berkeley. Call: (510)540-8283.

July 8 WordPerfect For Windows Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

July 9 Intro To dBASE IV Class. Computer Link. Berkeley. Call: (510)540-8283.

July 9 Intro To Windows Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

July 9 Lotus For Windows Class, Part 1. San Ramon. MicroTek. Call: (510)831-8075.

July 10 Advanced WordPerfect 5.1 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

July 10 Beginning Paradox 3.5 Class. San Ramon. MicroTek. Call: (510)831-8075.

July 10 Intro To DOS Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

July 11 Build & Upgrade An IBM PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

July 11 Computer Show & Sale. Oakland Coliseum. Richard James Corp. Call: 1-800-533-7220. BBS: (415)464-6408.

July 11 The Miraculous Modem Course: A Beginners Guide To Telecommunications On The Mac. San Francisco. Media Alliance Computer Access. Call: (415)771-7133.

July 12 Computer Show & Sale. Scottish Rite Center, Sacramento. MarketPro. Call: (415)388-8893.

July 12–17 Tenth National Conference On Artificial Intelligence. San Jose. AAAI. Call: (415)328-3123. Email: ncai@aaai.org.

July 13 Intro To Windows 3.1 Class. Berkeley. Computer Link. Call: (510)540-8283.

July 13–14 Basic UNIX Systems Administration Course. San Francisco. UC Berkeley Extension. Call: (510)642-4111.

July 13–14 Mobile '92: A Technologic Conference. San Francisco. Technologic Partners. Call: (212)696-9330.

July 13–14 Project Planning Software Workshop. San Francisco. Symantec Training Group. Call: 1-800-786-8620.

July 14 Intro To Word 2.0 For Windows Class. Computer Link. Berkeley. Call: (510)540-8283.

July 14 Network System Strategy Seminar. Oakland. Vision Network Systems, Inc. Call: (510)562-6600.

July 14–16 Mactivity'92: The Macintosh Connectivity Conference. Santa Clara. The Winehouse Computer Co. Call: 1-800-798-2928.

July 14–17 Intermediate AutoCAD Class. San Francisco. SFSU Extended Education. Call: (415)338-1207.

July 14 & 21 Internetworking Class. San Francisco. SFSU Extended Education. Call: (415)338-1207.

July 15 Intro To Excel 4.0 Class. Computer Link. Berkeley. Call: (510)540-8283.

July 15 SEF Dinner Meeting: Presentation On End-User Programming—Why Should We Care? Palo Alto. Software Entrepreneurs' Forum. Call: Barbara Cass, (415)854-7219.

July 16 Accounting Systems Seminar: Tax And Managerial Reporting. Oakland. David Simon, CPA. Call: (510)893-5753.

July 16 Intro To dBASE IV Class. Computer Link. Berkeley. Call: (510)540-8283.

July 16–17 CPA Trade Show. Oakland. Vision Network Systems, Inc. Call: (510)562-6600.

July 17 MacWrite Pro Class. San Jose. Abacus Training. Call: (415)759-2481.

July 18 Computer Mart. Cupertino. De Anza College Special Events. Call: (408)864-8350.

Continued

JULY 16

INTERNATIONAL MACINTOSH USERS GROUP

San Mateo

IMUG offers a forum for multilingual and multiscript computing. The July meeting will feature Peter A. Weissman of Bayware, Inc. His topic will be "Multimedia-Based Education: Is It Really A Good Medium For Teaching?" Non-member admission to the monthly meeting is $2. Call: Roger Sherman, (415)859-5146.

CLARITY TECHNOLOGIES' NEW TRAINING CENTER

Clarity Education, a division of Clarity Technologies, announced the completion of a new San Francisco training center. Clarity Education offers a full range of Certified NetWare Engineer and System Administrator courses, including both Novell-Authorized training courses and specialized, custom-tailored classes. Clarity is also a UNIX System Laboratories Education Center providing a full spectrum of courses. With locations in San Francisco, San Jose, and Walnut Creek, Clarity serves the entire Bay Area. Call: Clarity Technologies, Inc., (510)937-9000.

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DeskPro 386N, 386SX/20	
2 MB Module	225
DeskPro 286N, 386N	
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4 MB Exp Brd	775
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RESOURCES

Calendar Of Events continued

July 18 Computer Show & Sale. El Rancho Hotel, Santa Rosa. MarketPro. Call: (415)388-8893.

July 18 Computer Show & Sale. Santa Clara County Fairgrounds. Richard James Corp. Call: 1-800-533-7220. BBS: (415)464-6408.

July 18 & 28 PC Repair Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

July 19 Computer Show & Sale. Concord. MarketPro. Call: (415)388-8893.

July 20 Your Home Computer As A Learning Tool: A Workshop For Parents. Berkeley. UC Berkeley Extension. Call: (510)642-4111.

July 20–22 Object World Expo And Conference. San Francisco. World Expo Corp. Call: 1-800-225-4698, (508)879-6700.

July 20–23 ComNet Conference & Exposition. San Francisco. World Expo Corp. Call: 1-800-225-4698.

July 21 Intermediate Microsoft Excel 3.0 For The Mac Class. San Francisco. Abacus Training. Call: (415)759-2481.

July 21 Intro To Networks Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

July 21 Intro To PageMaker 4.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

July 21 Lotus 1-2-3 3.1 Class. San Ramon. MicroTek. Call: (510)831-8075.

July 22 Beginning Windows 3.0 Class. San Ramon. MicroTek. Call: (510)831-8075.

July 22 Intro To Macintosh Networks Class. San Francisco. Abacus Training. Call: (415)759-2481.

July 22 Intro To Multimedia Application Development Seminar. Campbell. AVTEX. Call: (408)371-2800.

July 22 Word For Windows Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

July 22 WordPerfect For Windows Class, Part 1. San Ramon. MicroTek. Call: (510)831-8075.

July 22–24 Mexico Developer Conference. Mexico City. Apple Computer and *Macworld* magazine. Call: Sandy Butler, (415)267-1749. AppleLink: Butler.S.

July 23 Beginning PC Excel 3.0 Class. San Ramon. MicroTek. Call: (510)831-8075.

July 23 Intermediate Excel For Windows Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

July 23 Micro MRP Seminar: Manufacturing With Micro MRP. Oakland. Vision Network Systems, Inc. Call: (510)562-6600.

July 23 Telecommunications Systems Selection Class. San Francisco. SFSU Extended Education. Call: (415)338-1207.

July 23 Word For Windows Class, Part 2. San Ramon. MicroTek. Call: (510)831-8075.

July 23–24 Beginning 4th Dimension Class. San Jose. Abacus Training. Call: (415)759-2481.

July 23–24 PC Repair Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

July 23–24 Q&A: Database/Word Processing Software Workshop. San Francisco. Symantec Training Group. Call: 1-800-786-8620.

July 24 Beginning WordPerfect 5.1 Class. San Ramon. MicroTek. Call: (510)831-8075.

July 24 Intermediate Paradox 3.5 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

July 24 Intro To Quattro Pro 3.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

July 24 Wireless LAN Seminar. Oakland. Informational Data Network. Call: (510)465-9084.

July 24–August 21 PhotoShop Intensive Class. San Francisco. Media Alliance Computer Access. Call: (415)771-7133.

July 25 Computer Show & Sale. San Mateo Expo Center. Richard James Corp. Call: 1-800-533-7220. BBS: (415)464-6408.

July 25 Social Impact Of Modern Telecommunications Systems Class. San Francisco. SFSU Extended Education. Call: (415)338-1207.

July 26 Computer Show & Sale. Centennial Hall, Hayward. MarketPro. Call: (415)388-8893.

July 26–31 SIGGRAPH '92. Chicago. ACM. Call: (312)321-6830. Email: info92-@siggraph.org.

July 27–31 3D Studio Class. San Francisco. SFSU Extended Education. Call: (415)338-1207.

July 27–August 24 Desktop Publishing Comprehensive Class. San Francisco. Media Alliance Computer Access. Call: (415)771-7133.

July 27–August 31 MacroMind Director Class. San Francisco. Media Alliance Computer Access. Call: (415)771-7133.

July 28 WordPerfect Desktop Publishing

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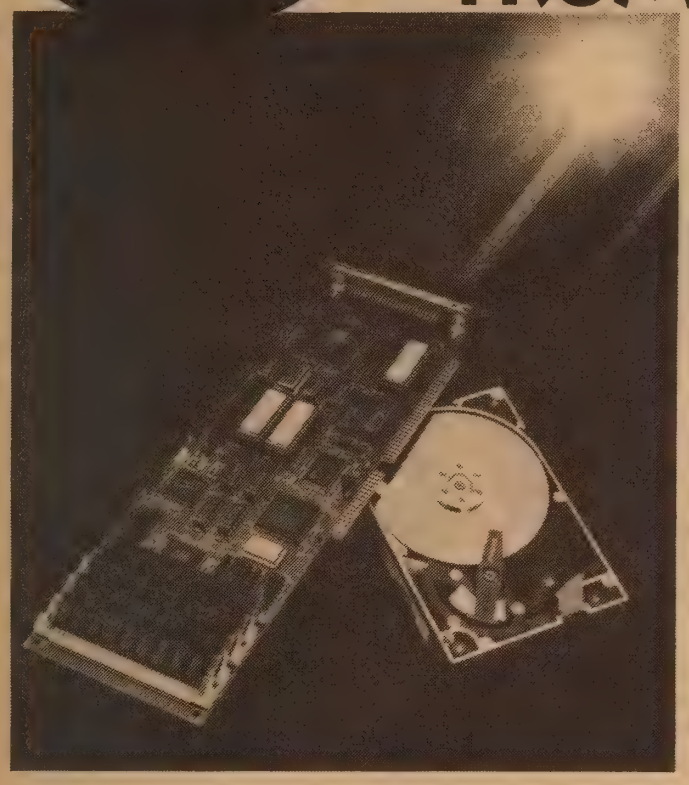

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Dave Pearlman, PC PLUS, (UK), March 1992

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Calendar Of Events continued

Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

July 28 & August 4 Managing Telecommunication Networks Class. San Francisco. SFSU Extended Education. Call: (415)338-1207.

July 29–30 HyperCard Stack Development Class. San Francisco. Abacus Training. Call: (415)759-2481.

July 30 FileMaker Pro Class. San Francisco. Media Alliance Computer Access. Call: (415)771-7133.

July 30 Intermediate WordPerfect Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

July 30 Paradox Class, Part 1. San Ramon. MicroTek. Call: (510)831-8075.

July 31 Intro Excel For Windows Class. San Ramon. MicroTek. Call: (510)831-8075.

AUGUST

August 1 Build & Upgrade An IBM PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

August 1 Computer Show & Sale. San Francisco Cow Palace. Richard James Corp. Call: 1-800-533-7220. BBS: (415)464-6408.

August 3 Beginning dBASE IV Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

August 3–5 GroupWare '92 Conference And Exposition. San Jose. The Conference Group. Call: 1-800-247-0262.

August 4 Intro To FoxPro 2.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

August 4–5 Novell System Supervisor 3.11 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

August 5 Intro To WordPerfect Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

August 6 Intro To Networks Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

August 7 Intro To PageMaker 4.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

August 8 Computer Show & Sale. Baybridge Holiday Inn, Emeryville. MarketPro. Call: (415)388-8893.

August 9 Computer Show & Sale. Marin Civic Center. MarketPro. Call: (415)388-8893.

August 10 Intermediate Paradox 3.5 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

August 10–11 Project Planning Software Workshop. San Francisco. Symantec Training Group. Call: 1-800-786-8620.

August 10–11 The Macintosh Survival Course. San Jose. Data-Tech Institute. Call: (201)478-5400.

August 10–13 Fifth C++ Technical Conference. Portland, OR. USENIX. Call: (714)588-8649.

August 11 WordPerfect For Windows Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

August 11–12 MS-DOS For CAD Class. San Francisco. SFSU Extended Education. Call: (415)338-1207.

August 12 Aldus FreeHand Class. San Fran-

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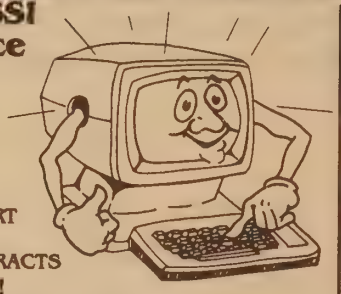

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w/ 512K SVGA Card ..... $ 265
Non-Interlaced SVGA Monitor
(1024x768 .28) w/ 1MB SVGA Card. $ 395
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MOTHERBOARD

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386 33MHz ..... $ 185
386 33MHz w/64K Cache..... $ 205
386 40MHz w/64K Cache ..... $ 215
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486 DX 33MHz..... $ 485
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Tseng Lab SVGA w/1MB ..... $ 85
Tseng Lab SVGA w/1MB HiColor..... $ 104
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2400 Baud Internal Modem ..... $ 38
9600 Baud External Modem ..... $ 295
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Calendar Of Events continued

cisco. Media Alliance Computer Access. Call: (415)771-7133.

August 12 Intro To Windows Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

August 12 Intro To Windows 3.1 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

August 13 Intro To DOS Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

August 13–14 PC Repair Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

August 14 Intro To Paradox Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

August 15 Computer Mart. Cupertino. De Anza College Special Events. Call: (408)864-8350.

August 15 Computer Show & Sale. Oakland Coliseum. Richard James Corp. Call: 1-800-533-7220. BBS: (415)464-6408.

August 15 & 22 PC Repair Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

August 18–21 Intro To AutoCAD Class. San Francisco. SFSU Extended Education. Call: (415)338-1207.

August 19 Intermediate Word For Windows Class. San Ramon. MicroTek. Call: (510)831-8075.

August 19–21 Time Line 5.0: Project Management Software Workshop. San Francisco. Symantec Training Group. Call: 1-800-786-8620.

August 20 Accounting Systems Seminar: Tax And Managerial Reporting. Oakland. David Simon, CPA. Call: (510)893-5753.

August 20 Advanced Quark Class. San Francisco. Media Alliance Computer Access. Call: (415)771-7133.

August 20 Advanced WordPerfect 5.1 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

August 20–21 PC Repair Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

August 20–21 Q&A: Database/Word Processing Software Workshop. San Francisco. Symantec Training Group. Call: 1-800-786-8620.

August 21 Intermediate Excel For Windows Class. San Ramon. MicroTek. Call: (510)831-8075.

August 21 WordPerfect Desktop Publishing Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

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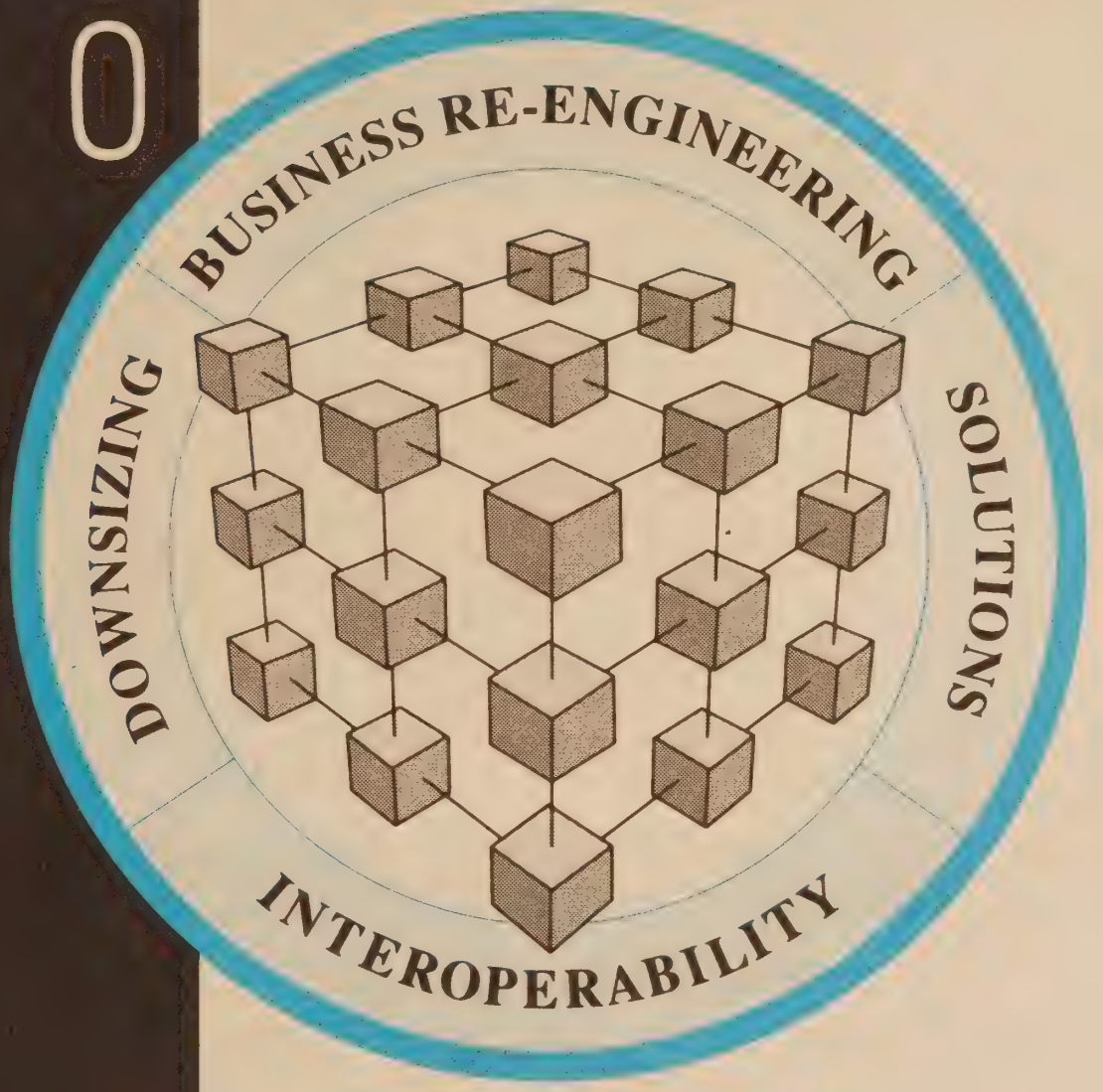

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September 14–15 Novell System Supervisor 3.11 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

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September 17 Accounting Systems Seminar: Tax And Managerial Reporting. Oakland. David Simon, CPA. Call: (510)893-5753.

September 18 Advanced WordPerfect 5.1 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

September 19 Computer Mart. Cupertino. De Anza College Special Events. Call: (408)864-8350.

September 21 Smart Color '92 Seminar. Palo Alto. Savitar. Call: Sarah Mlyneux, (415)243-3030

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September 21–25 C Plus C++...In Action Conference And Exposition. Santa Clara. Boston University. Call: Operations Dept., (508)649-9731, ext. 248.

September 23–25 Seybold San Francisco Conference. San Francisco. Seybold Seminars. Call: 1-800-777-6650.

September 24 Wireless LAN Seminar. Oakland. Informational Data Network. Call: (510)465-9084.

September 24–25 Q&A: Database/Word Processing Software Workshop. San Francisco. Symantec Training Group. Call: 1-800-786-8620. ■

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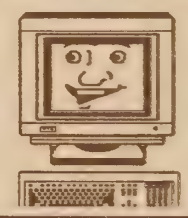

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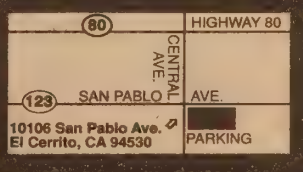

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While a BBS discussion of your acute medical problem might not be the fastest way to cure it (call your doctor instead), they are a natural place to discuss chronic illnesses, traditional and alternative treatments, and short- and long-term or permanent disabilities. BBSes also serve as meeting and information-sharing venues for all kinds of medical professionals, technicians, and emergency service workers.

There aren't many medically oriented BBSes in the Bay Area, but they are notable for their diversity of subject matter, from attention deficit disorder to biomedical engineering, and each has a different emphasis.

We return to **Body Dharma BBS** in Berkeley, which has been mentioned in this column before and is a significant resource in medical, disability, and alternative therapy areas, as well as those already reviewed. (510/836-4717, 2400 baud, 8-N-1, Barry Kapke, sysop.) Body Dharma carries a large number of related Fidonet echo areas, such as stress management, chronic pain, chronic fatigue syndrome, diabetes, general medical issues, and nurses' network. A couple of the Fidonet echos originate on Usenet and are gatewayed through Fidonet.

If a message area becomes popular enough on a local Fido BBS, it can be offered as an echo through the entire Fidonet system, so the topics available on Fidonet are often driven by the expertise and participation of its local moderator. This has the effect of limiting topics offered, and led to the creation of another network called ADAnet, which, among other things, seeks to fill in topics not currently covered by Fidonet echos. Because the ADAnet message areas are not necessarily participation driven, an exhaustive list of ADAnet echos will include several that get little or no traffic. These include message areas for epilepsy, multiple sclerosis, muscular dystrophy, and post-polio syndrome.

But ADAnet, sponsored by the Disability Law Foundation, a nonprofit organization started by lawyer Bill Freeman in Birmingham, Alabama, is also an ambitious attempt to provide a forum for disabled activism, and also to make its resources available to employers who need more information and help with the Americans with Disability Act of 1991. ADAnet also produces a monthly newsletter available for download from Body Dharma, along with other ADAnet informational material. Other ADAnet message areas about disability include the law, advocacy, architectural barriers, adaptive technology, independent living, and rights and politics.

Visual disabilities are covered in message areas from ADAnet and RBBSnet, and the BBS also carries a hearing disabilities message area from Fidonet.

Continued

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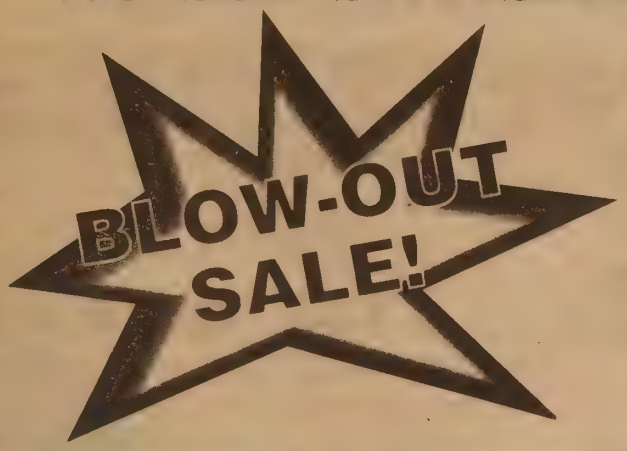

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SYSTEMS	Motherboard & CPU	BASIC SYSTEMS	BASIC + 40MB HD + SVGA	BASIC + 80MB HD + SVGA	BASIC + 120MB HD + SVGA	BASIC + 200MB HD + SVGA
EISA 486DX2-50C 256	1,145	1,350	1,785	1,855	1,915	2,135
EISA 486DX-33C 256	930	1,110	1,548	1,610	1,660	1,860
486DX2-50C 64 ISA	640	820	1,256	1,326	1,376	1,576
486DX-33C 64 ISA	498	649	1,070	1,140	1,190	1,380
486SX-25C ISA	250	430	870	940	998	1,190
386DX-40C 64	205	370	785	858	915	1,105
386DX-33C 64	185	350	765	838	888	1,078
386DX-25	160	330	755	828	878	1,068
386SX-25	115	280	720	785	835	1,035
386SX-16	105	270	710	775	825	1,025

BASIC SYSTEM CONFIGURATION: Motherboard & CPU, 1MB memory installed, 2HD/2FD controller with **2 serial, 1 parallel and 1 game ports**, 1.2MB or 1.44MB floppy drive, mini-tower case with 200W power supply and 101-key enhanced keyboard

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Orchid Prodesigner IIs Hicolor	$ 149
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NEC 4FG (15", 1024x768, 0.28)	$ 745
NEC 5FG (17" 1280x1024 0.28)	$1,330
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site. Free. Sysop: Robert Mueller. [Exp. #97.]

Lynn-Western Newswires. (408)778-5994 & 778-9656. 8-N-1, 24 hrs., 1200/2400. FidoNet 1:143/304. Professional information on technology, management, and worldwide investment news. Stock Market data online. [Exp. #98.]

Magic Kingdom. (408)245-3961, 253-2426. 2400. Teleconference, files, email, multiplayer games, and more! Sixteen lines. [Exp. #97.]

Mail Stop. (408)257-1919. 8-N-1, 24 hrs., 300/1200/2400. Free, private email and SIG system. Internet mailboxes avail. [Exp. #97.]

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Moonlit Knight. (408)244-3459. 300–14,400. New user help, music, games, & fun. TechNet HUB, free! Sysop: Allen Woolley. [Exp. #97.]

Moose Is Loose BBS. (408)773-9573. 1200/2400/9600. The best message base under Sunnyvale's fruit can. SASE reg. required for file access. Sysop: John Giever. [Exp. #99.]

Mountain Retreat. (408)335-4595. 1200–14,400. 660MB, FidoNet member, specialty Turbo Pascal. Sysop: John Jamieson. [Exp. #97.]

The Mud Hole BBS. (408)739-8297. Lots of messages, great doors, and files. Free. [Exp. #98.]

NightLog BBS. (408)655-1096, 655-8294. 24 hrs., 300–14,400. Files, adult, eight lines, 3GB. Sysop: Karl Van Lear. [Exp. #97.]

Online Consultant. (408)223-9886. 8-N-1, 1200/2400. PC help for individuals and small business. [Exp. #97.]

Pacific Exchange BBS. (408)946-8561. Twelve lines and over 40,000 IBM files. Since 1986. [Exp. #98.]

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Ring Of Fire BBS. (408)739-8753 (2400bps), 739-8371 (9600bps). BBS for United Sysop's Association and Silicon Valley Novell Users Group. Since 1983. Sysop: Bill Strouse. [Exp. #98.]

The Rising Storm. (408)739-8693. 8-N-1, 9600. Emergency prep., firearms, current events, earthquake maps. Sysop: Kirk DeHaan. [Exp. #97.]

San Jose Connection. (408)956-8819. Fidonet 1:143/111 + echo files, sexual gay/str, validation for DL/Sexual areas. Free access. Sysop: Earl Faneuf & Manuel Martinez. [Exp. #98.]

Second Source Parts, Inc. (408)248-3870. 8-N-1, 24 hrs., 300/1200/2400. Medical equipment, new & used parts, consumables, info & more. [Exp. #97.]

ShrinkTank BBS. (408)257-8131. 8-N-1, 300/1200/2400 & 9600 for SuperModem users. Mental Health, Psychology, Men's Issues, Metrolink conferences. All users welcome! Sysop: Rob Bischoff, Ph.D. [Exp. #99.]

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Texas Instruments PCs. (408)296-2503. 24 hrs., 2400. Message base, user group info & software for TIPC. Sysop: Mark Cantrell. [Exp. #99.]

THMBBS. (408)779-8560. 8-N-1, 24 hrs., 1200/2400. Online games, echo mail. Sysop: Michael Smith. [Exp. #98.]

The Village. (408)229-0706. 300/1200/2400/9600/14,400, USR-HST V.42bis, Online games, 400MB. Full access with first call. Sysop: Michael Wilson. [Exp. #99.]

415

4 Corners BBS. (415)989-0211. 8-N-1, 24 hrs., 300/1200/2400. Online games, file locator, msg. board, 20MB with 2GB stored. Free access, low rates. Sysop: Stephen Kortz. [Exp. #97.]

ABACUS (Atari Bay Area Users Society). (415)587-8062. 300/1200/2400. For 8-bit and ST/TT users. [Exp. #99.]

Alien BBS. (415)359-8774. 8-N-1, 24 hrs., 1200/2400. Amiga/IBM/Mac info. Adult boards w/registration. Free. Sysop: Ed Vandehey. [Exp. #97.]

Anatomically Correct BBS. (415)856-8425. 24 hrs., 2400. Free, adults only, unique "chat," dozens of articles & message base. Sysop: Howeird. [Exp. #99.]

Art/Online. (415)255-7045. 8-N-1, 1200/2400/9600. Fine Art Forum, local and international email. Sysop: Jim Raridan. [Exp. #97.]

Asian Exclusive Act. (415)338-7592. 24 hrs., 300/1200/2400, 9600 (Hayes only). Intelligent discussion of Asian American issues and events. All welcome, validation req'd. Sysop: Chin Ming Hornbuckle. [Exp. #97.]

Back Door For Men. (415)756-6238. 8-N-1, 24 hrs. Thirty-three lines, alt lifestyles, 18 and over only. [Exp. #98.]

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BAHUG BBS. (415)326-4486. 8-N-1, 24 hrs., 300/1200/2400. DTP info and help for Heath/Zenith machines. Free. Co-Sysops: Freeman Bradford and Ed Hayes. [Exp. #97.]

Body Dharma BBS is the source of Dharmanet, a network of Eastern-oriented topics, including traditional Asian medicine and bodywork, massage and bodywork, and holistic thought and lifestyle. A natural healing message area is the Pagan/Occult Distribution Network (PODS), which offers the mix of Western/Eastern therapies available for discussion on Body Dharma BBS.

Grateful Med BBS in Concord (510/689-0347, 2400 baud, 8-N-1, T.C. Dufresne, sysop) carries an eclectic mix of ADAnet and Fidonet medical and alternative health echos, including the Fidonet biomedical engineering and search and rescue echos, and local message areas.

Blink Connection BBS is dedicated to the exchange of information in support of the blind and visually impaired computer user. (510/276-4121, 2400 baud, 8-N-1, Russ Kiehne, sysop). Blink Connection carries the Fidonet Blink Talk echo (among others) and maintains a number of downloadable software utilities for the visually impaired, such as large print programs, and catalogs for software and hardware sources, such as voice output devices.

BayTalk BBS is a service of BayTalk Computer Users Group in Berkeley (510/864-6430, 2400 baud, 8-N-1, Tom Karnes, sysop) which provides information about computer access and technology for people with visual and physical input/output impairments. Along with a selection of fairly generic GASPnet echos, BayTalk BBS has numerous files of utilities, articles, catalogs, and newsletters (including the BayTalk Bytes newsletter) available for downloading. Membership in BayTalk Computer Users Group is $12/year, but access to the BBS is free. This is a small but socially active group which holds monthly face-to-face get-togethers.

AIDS Info BBS in San Francisco (415/626-1246, 2400 baud, 8-N-1, Ben Gardiner, sysop) is an open forum for user-to-user information and support about HIV and AIDS and mainstream and alternative therapies. The BBS carries an exhaustive archive of articles, citations, statistics, and resources, all of which are searchable. Almost half of the calls received by this all-volunteer effort, funded by user gifts and an occasional small corporate grant of equipment, are from outside the San Francisco Bay Area. ■

Bama Ultra. (415)552-0577. 24 hrs., 1200–14,400. Sun UNIX network, 1.5GB. UUCP, email, databases. Shell accounts. Guest login: visitor. Sysop: John Bouvier. [Exp. #99.]

BBS Of San Francisco Apple Core. (415)563-8652. 24 hrs., 2400. Lots of fun, supports Apple II and GS computers. [Exp. #99.]

The Big Board. (415)824-7952. 8-N-1, 24 hrs., 300/1200/2400. An alternative way for chubbies to meet chasers. For those without a computer, send a short message to the Sysop, who will put it on the board. Voice: (415)824-8254. Free. Sysop: Cliff Wilson. [Exp. #97.]

The Boundary Line BBS. (415)398-6171. 8-N-1, 24 hrs., 300/1200/2400. Attorney sysop for the real estate professional. Local conference only. Free. Sysop: William Mayo. [Exp. #98.]

California ConneXion Partyline. (415)927-2739. 8-N-1, 23.5 hrs., 300/1200/2400/9600/14,400. Nine lines, 400MB, group-chat, worldwide network, 40+ pubs,

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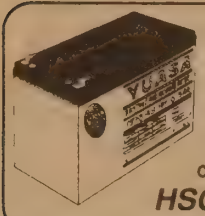

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MCR106-6 SCR 400V 4A	2701	.94	.85	.75	.50
1N5243 Zener Diode 13V 500mW	1369	.14	.11	.09	.07
1K 10 Watt Resistor	7874	.25	.20	.18	.15
75 Ohm 5 Watt Resistor	5344	.25	.20	.18	.15
1K DIP Resistor, 16 pin 15 element	1459	.50	.40	.30	.25
100K SIP Resistor, 8 pin 7 element	4594	.19	.17	.15	.11
5 pin DIN Socket, Cable Mount	11640	1.25	1.00	.75	.50
AC Line Cord, 16/3 SJT 6' Grey	11969	2.25	1.50	.95	.75
AC Line Filter, 6 Amp w/ IEC Recept.	7715	4.50	3.00	2.00	1.25
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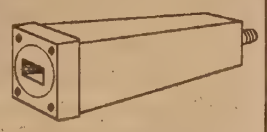

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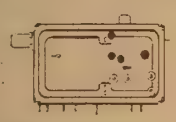
Many, many other kits available! Send SASE for complete list!

Perestroika Fallout...Soviet Science Collector's Item!

History on the march! Empires crumbling! Eager young scientists being trained for the new world order! We took advantage of the changing world scene to bring to you these unique items that also represent great value...Russian (formerly Soviet) microscopes! The manual calls them training microscopes, we would probably call them student-grade instruments, although they are not toys. They are biological (illuminated from below via mirror) microscopes with two objective lenses (8x, 20x) and three eyepieces (7x, 10x, 15x). The optical quality and workmanship are surprisingly good, given the stories we've heard of Soviet labor woes. The base and hinged armature are handsome painted cast aluminum, and the objective turret and lens bodies are chrome-plated brass. The only assembly required is to screw the eyepiece tube into the frame, and drop in your choice of eyepiece. These units are new, liberally greased (!), packed with a large sachet of dessicant in styrofoam & cardboard, and tied with string! The six-page manual is in fair English, and is duly rubber-stamped with several acceptance dates (1988) and certification numbers on the back. You can think of it as a piece of history, or just a decent, inexpensive microscope, only $69.95! Hurry, limited quantites!

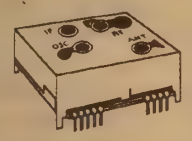
HSC #13065 ***$69.95***

Teeny Tiny Tuner Modules



The unusual item at left is a MITSUMI CRTV9-AC55F 83 Channel Reverse Converter -- the opposite of a tuner - input IF signal (45.75 MHz) converted to one of 83 CATV signal frequencies (55.25MHz to 547.25MHz) selected by voltage input to varactor diode (3-24VDC). Requires +12,+5VDC-- Pinout, Spec. Sheet & Block Diagram included. Body Measures 3.75"x2"x.75". Useful for Amateur TV? Hams?

HSC #13120 ***$14.95***

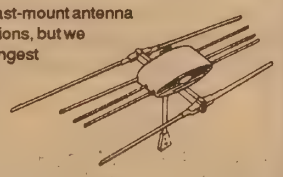


Here is a little module that you won't find anywhere else! This tiny (only 1" x 1.75" x .5") PC mount package is a varactor tuned FM tuner! Made by Toko (Model #TMC103A) for use on the PC FM Subcarrier adaptors at right. Uses 8 - 12VDC, tunes from 88.3 to 108.1 MHz from 75 ohm antenna input, has 10.7 MHz IF output with Vco output for control feedback to tuning circuitry. We provide a schematic of a suggested application showing pinout of this module with related tuning circuit.

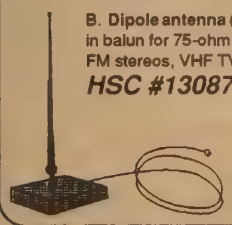
HSC #13101 ***$4.95 ea. or 10/$39.95***

Broadcast FM Antennas

A. Winegard SR-8108 Yagi-type FM/VHF Antenna. Small mast-mount antenna appears to have been designed for attic or drop-ceiling applications, but we can't see any reason not to use it outdoors. 22.5" boom, longest element is 67". It was intended for the data receivers at right in fringe reception areas, but will of course work fine for FM Broadcast reception with your stereo, as well as VHF/TV reception! New with assembly and mounting instructions.



HSC #13086 ***$19.95***



B. Dipole antenna (not shown). Typical 300-ohm stereo FM-type dipole antenna with built-in balun for 75-ohm coax, plus a six-foot coax cable with F-connectors. Works great with FM stereos, VHF TV's, or the units at right!

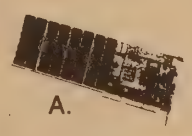
HSC #13087 ***$1.95ea. or 10/$15.00***

C. FM "Rubber Ducky" Antenna ...18" long with pivot joint on mounting box, 75-ohm coax cable (6 foot) with "F" connector. Could be used in place of "D" above.

HSC # 13088 ***$4.95***

FM Computer Network Gear...

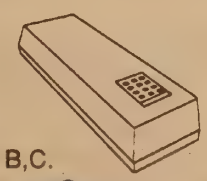
Just in...and it goes to show you what things you will find in Silicon Valley's surplus! We have come across a large quantity of components of a nationwide subscription computer network system...software, data and E-mail was sent by means of Broadcast FM Subcarrier and satellite! Perhaps another idea that was ahead of its time, who knows? Anyway, here is a rundown of the pieces, maybe you will think of something to do with them...Note: please don't contact the manufacturer, as they have moved on to other things!



A.

A. "PIN-Desk" IBM/FM Subcarrier Receiver Board. Made by Indesys (similar to illustration). Full length XT style board has shielded box with FM tuner (frequency selected by software), piggyback board with either a 80C31 or two CY2901's. Comes with dipole antenna (see "B" at left) and two diskettes, one marked "Send" and one marked "Receive". This was intended to be part of an FM subcarrier subscription "network" for sending and receiving messages, files and data anywhere in the country! A hacker's bonanza with (depending on revision) NVSRAM's, MAX231, NSC800, Synthesized FM tuner, RF Parts, etc.!

HSC #13084 ***$24.95***



B,C.

B. "PIN-Mail" Reciever SA-287A, also made by Indesys. This was part of their "PIN" system, and you were supposed to be able to receive E-mail, unattended,via FM Subcarrier with just this box, an antenna (included) and a printer! Or it could be hooked up to a computer via parallel port. Box has numeric keypad on top, plus connectors on back for power, printer, computer and antenna. No diskettes (software is in ROM), just the receiver unit, dipole antenna and power supply.

HSC #13085 ***$24.95***

C. Satellite Data Receiver ST-189, by Indesys. Externally similar to "C" above, but very different inside, unit was designed to be hooked to a small dish antenna and LNB (not included, and we don't have any!) for satellite reception of data and E-mail. Power Supply provided. Many interesting parts inside, including Z-80, NVSRAM, RF Linear parts, 80C31, Sierra Semi SC74008, high frequency varactor tuner, etc. Experimenter's delight!

HSC#13100 ***$24.95***

Macintosh Serial Cable Set

Three piece set of Mac accessory cables consists of one RJ11 to DB9S cable, one RJ11 to Mini-DIN 8M cable, and one DB9M to DB25F adaptor. Both cables are six feet long and have noise suppressor chokes, and all three items are an attractive off-white color. Large quantity purchase means a special low price!

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510

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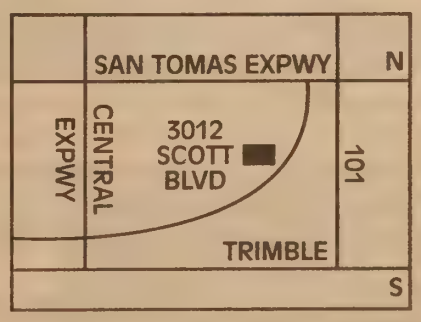

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1MBx1-70	4.20
1MBx1-80	3.90
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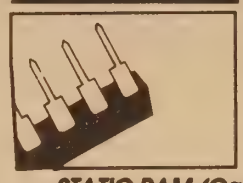

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Wrencher's Workbench. (510)357-0927. 8-N-1, 24 hrs., 300/1200/2400. Messages, files, advice on anything automotive—repairs to purchases. Sysop: Walther Boland. [Exp. #97.]

707

The Black Rose. (707)557-6444. 24 hrs., 300/1200/2400. All computers welcome. A new Commodore 64/128 BBS, running Image v1.2a. Sysop: Captain Keelhaul. [Exp. #97.]

Gridcom BBS. (707)746-8490. 8-N-1, 24 hrs., 14,400. Lrg adult section, LNet HQ. [Exp. #97.]

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Recommended BBS. (707)448-2225. 24 hrs., 300/1200/2400. Multiuser games, teleconference, conversational and technical areas, seven lines. All welcome. Sysop: Jay Parangalan. [Exp. #97.]

The South Pole BBS. (707)643-NBUG. 300/1200/2400. Sponsored by North Bay Users Group. Msg. areas, doors, files, matchmaker. Great for beginners. Sysop: The Penguin. [Exp. #97.]

UNIX Online. (707)792-0402, 795-1721. 24 hrs., Usenet access. For UNIX, Amiga, Mac, and DOS users. [Exp. #98.]

User Friendly BBS. (707)645-8894. 8-N-1, 24 hrs., 9600. IBM/Amiga, Linet, msgs., sci-fi/fantasy info and reviews, doors. Sysop: Jim K. [Exp. #99.]

916

The Crow's Nest BBS. (916)925-7496. 8-N-1, 24 hrs., 300/1200. Commodore 64/128, Vic-20, Plus/4, C16, CP/M, and some PET support. Free. Sysop: John O'Neil. [Exp. #98.]

ASSOCIATIONS

American Association For Artificial Intelligence (AAAI). Call: (415)328-3123. Email: membership@aaai.org. [Exp. #100.]

Association For Women In Computing. Meetings: 1st Wed., 5:30 pm, San Francisco. Call: (415)979-8450. [Exp. #99.]

The Association For Worldwide Software Support Management. Meetings: 2nd Tues., Milpitas Sheraton. Call: Mikael Blaisdell, (415)865-1323. [Exp. #100.]

Association Of Database Developers (ADD). Meetings: 2nd Thurs., 7:00 pm, The Gatehouse, Fort Mason Center, San Francisco. Organization for professional xBASE language systems developers. Membership $50/yr or $5/meeting. Call: JoAnn, (415)863-6706. [Exp. #101.]

The Black Data Processing Associates, Silicon Valley Chapter. Meetings: 4th Thurs., 6:30 pm, Amdahl Corp., Sunnyvale. Call: Doug Jones, (408)737-5999. [Exp. #97.]

Computer Professionals For Social Responsibility. Meetings: 2nd Wed., 7:30 pm, UC Berkeley, Evans Hall, Rm. 608-7. Call: Judy Stern, (510)643-7499. [Exp. #101.]

Data Processing Management Association. Call: (415)978-0868. [Exp. #98.]

IEEE Computer Society, San Francisco Chapter. Meetings: 3rd Wed. Call: (415)905-4400. [Exp. #99.]

Independent Computer Consultants Association, Northern California Chapter. Meetings are open to all. Only national trade assoc. comprising non-aligned working computer professional with in-the-trenches experience. Call: ICCA, (415)441-2948. [Exp. #102.]

International Computer Professional Association. An association for software professionals who want to work abroad. Call: Tony Rodriguez, (415)252-7467. [Exp. #98.]

International Network Of Women In Technology. Dedicated to significantly increasing the leadership of Women in Technology in industry and government. Call: Dr. Carolyn Turybfill, (415)336-1007. Email: Carolyn Turybfill@Eng.Sun.COM. [Exp. #97.]

Networkers' Toastmasters. Meetings: Every Tues., noon–1:00 pm, 2560 N. First St., San Jose. Call: Mona Kellem, (408)534-1255. [Exp. #98.]

North Bay Systems Professionals. Meetings: 3rd Wed., 7:00 pm, Holiday Inn, Terra Linda, 1010 Northgate Dr., San Rafael. NBSP provides a forum and network for system professionals. Call: Harry Chapman, (415)291-0174. [Exp. #101.]

Robotics Society Of America. Meetings: 2nd Mon., 8:00 pm, Exploratorium Library, San Francisco. Call: Brad Smallridge, (415)550-0588. [Exp. #101.]

SBEA (South Bay Entrepreneurs Association). Meetings: Twice weekly. Financial success and personal growth through teamwork. Call: (408)727-5950. BBS: (408)267-8325. [Exp. #99.]

Society For Technical Communication, Berkeley Chapter. Meetings: 2nd Wed., 6:00 pm, Yenching Restaurant, 2017 Shattuck Ave., Berkeley. Call: Rich Julius, (415)837-0397. [Exp #102.]

Society For Technical Communication, San Francisco Chapter. Meetings: 3rd Wed. Call: (415)985-7121. [Exp. #97.]

Software Entrepreneurs' Forum. Call: Barbara Cass, (415)854-7219. [Exp. #102.]

United Sysops Association. Meetings: 2nd Wed., 7:00 pm, Coco's, 1035 S. Mary Ave., Sunnyvale. Organization of bulletin board sysops and users. Call: Bill Strouse, (408)739-9081. [Exp. #101.]

Women's Computer Society. Meetings: Last Tues. Call: Tanya Halepota, (415)949-3936. [Exp. #98.]

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Computer Associates User Group. Meetings: 1st month of quarter on 3rd Wednesdays. Holiday Inn, 1500 Van Ness. Come share ideas and information with other local users of Computer Associates Accounting Software! Call: Beth E. Markus, (415)864-6770. [Exp. #98.]

AMIGA

3rd Dimension—Imagine/ Lightwave User Group. Meetings: 1st & 3rd Mon., Computer Showcase, 2739 Geary Blvd., SF. Call: Ollie, (415)863-8792. [Exp. #102.]

AAA—Amiga Addicts Anonymous. Meetings: 3rd Tues., Concord Water District Bldg., 1311 Concord Ave. Classes, BBS, pub. dom. disks, info line. Call: (510)935-0829. [Exp. #100.]

ACCESS—Amiga & Commodore Computer Enthusiasts Society. Meetings: 2nd Thurs., 7:00 pm, Livermore Airport Terminal. Call: Paul, (510)829-6053. [Exp. #102.]

ALF—Amiga Learners Forum. Meetings: 3rd Sun., 6:00 pm, Cupertino Library. Beginners group. Call: (408)262-9334. [Exp. #100.]

Amiga Nation. Meetings: 1st Tues., 7:30 pm, 324 Springs St., Suisun. Call: (707)421-2283. [Exp. #98.]

Amiga User Group—Germany. German Amiga user group is seeking contacts in the US. Contact: Nils Wietelmann, Unter den Heestern 28, W-2839 Kirchdorf, Germany. [Exp. #102.]

AWEST Amiga Users. Meetings: 1st Wed., 7:00 pm, Computer Showcase, 2739 Geary, SF. Call: (415)584-8406. [Exp. #97.]

FAUG—First Amiga User Group. Meetings: 1st Tues., 7:00 pm, HT Electronics, 275 N. Matilda Ave., Sunnyvale. Call: Mike Fisher, (415)855-9426, BBS (415)595-2479. [Exp. #100.]

TOGA—The Other Group Of Amigoids. Meetings: 4th Sat., 12:30 pm, Milpitas Library, 40 N. Milpitas Blvd. Call: Lawrence Brown, (408)984-6036. [Exp. #100.]

APL

APL Bay Area User Group. Meetings: 2nd Mon., 7:00 pm. Call: Tibor Horvath, (415)283-5611. [Exp. #100.]

APPLE

Tri-Valley Apple II User Group. Meetings: 1st Wed., 7:00 pm, Glendale Federal Bank, 3101 Crow Canyon Place, San Ramon. Come and learn more about your computer. Support II+, IIc, IIe, IIgs. Call: (510)828-0959. [Exp. #99.]

AT&T

AT&T Computer User Group, North Bay. Meetings: 1st Wed., informal discussion at 6:00 pm, program begins at 7:00 pm, San Francisco AT&T Bldg., 50 Fremont St. MS-DOS and UNIX. Call: Jim Lansing, (415)885-6631 or Joe Mahoney, (415)584-6510; BBS (415)829-6027. [Exp. #99.]

AT&T Computer User Group, South Bay. Meetings: 2nd Wed., informal discussion at 6:00 pm, program begins at 7:00 pm, Sunnyvale AT&T Bldg., 1090 E. Duane Ave. MS-DOS and UNIX Call: Joe Lipsig, (408)733-6522; BBS (408)946-7734. [Exp. #99.]

AT&T UNIX Computer User Group, South Bay. Meetings: 4th Wed., new user education at 6:30 pm, program begins at 7:00 pm, Sunnyvale AT&T Bldg., 1090 E. Duane Ave. Call: Thad Floryan, (408)985-7100; USENET, thad@cup.portal.com. [Exp. #99.]

ATARI

ABACUS (Atari Bay Area Users Society). Meetings: 1st Sat. San Francisco. Call: (415)469-7924. [Exp. #102.]

Bay Area Atari Users Group (BAAUG). Meetings: 1st Mon., 7:30 pm, Agnews Aud., 2nd fl., San Jose. Call: Joe Fischer, (408)988-3065. [Exp. #101.]

Santa Clara Atari User Group. Meetings: 2nd Wed., 7:00 pm, San Jose Computers Showroom, 1278 Alma Court, San Jose, near First and Alma. Call: Ron Reade, President, (408)225-7162. BBS: (408)848-6032, 300/1200/2400. [Exp. #99.]

COMMODORE

64/More CUG, Cupertino Chapter. Meetings: 3rd Sun., 6:00 pm. Cupertino Library. Call: (408)262-9334. [Exp. #100.]

64/More CUG, North Valley Chapter. Meetings: 2nd Sat., 10:00 am. Milpitas Library. Call: (408)262-9334. [Exp. #100.]

ACCESS—Amiga & Commodore Computer Enthusiasts Society. Meetings: 2nd Thurs., 7:00 pm, Livermore Airport Terminal. Call: Paul, (510)829-6053. [Exp. #102.]

CAVE—Commodore Amiga Video Enthusiasts. Meetings: Every other Sat., 8:00 pm, 304 Springs St., Old Suisun. Call: Ron, (707)421-2283. [Exp. #98.]

Commodore Hayward User Group. Meetings: 2nd Sat., 2:00 pm, Palma Ceia Park. (510)793-2514. [Exp. #97.]

CP/M

San Francisco Computer Society. Meetings: 7:00 pm, Laguna Honda School, 1350 7th Ave., San Francisco. Call: Ralph Gallegher, (415)929-0252. [Exp. #101.]

dBASE

ADD dBASE Software SIG. Meetings: 3rd Tues, 7:30 pm, Fort Mason Center, San Francisco. Led by Miriam Liskin. Call: JoAnn, (415)863-6706. [Exp. #101.]

ADD Fox Software SIG. Meetings: 1st Thurs., 7:00 pm, Fort Mason Center, San Francisco. Call: JoAnn, (415)863-6706. [Exp. #101.]

East Bay Database User Group. Meetings: 3rd Sun., 1:30 pm, 2415 Grant St., Berkeley. Call: David Chilcott, (510)653-1303. [Exp. #98.]

DESKTOP PUBLISHING

San Mateo County Ventura Publisher User Group. Meetings: 3rd Mon., 6:45 pm, San Mateo ROP, 1800 Rollins Rd., Rm. 14, Burlingame. Call: Elinor Cruze, (415)366-5317. [Exp. #99.]

FREEDOM, PRIVACY, AND TECHNOLOGY

BMUG SIG On Freedom, Privacy, And Technology. Meetings: Last Sun., 2:00 pm, BMUG office, 2055 Center St., Berkeley. Call: Judi Clark, (510)549-2684. [Exp. #100.]

IBM AND COMPATIBLES

Alameda Computer User Group. Meetings: 2nd Wed., 7:30 pm, Social Hall, Temple Israel, Island Dr. and Mecartney Rd. Providing an informal forum for both Macintosh and PC users to explore questions about hardware and software. Call: Dan Meyers, (510)521-3323. [Exp. #99.]

Berkeley PC User Group. Meetings: 2nd Mon., 7:00 pm, Winners Circle Systems, 2618 Telegraph Ave., Berkeley. Presentations followed by discussion, PD library, newsletter, Geo Ensemble SIG. Call: Mel Mann, (510)526-4033. [Exp. #101.]

Delta PC Users Group. Meetings: 3rd Sat., 10:00 am. Call: (510)427-2255, ext. 744. [Exp. #101.]

DVPC—Diablo Valley User Group. Meetings: 1st Thurs., 7:30 pm, Corondolet High School, corner of Treat Blvd. and Winton Ave., Concord. SIGs include WordPerfect, Windows, Paradox, Beginner's, Visual Basic, and a new education/entertainment group. Call: (510)943-1637. [Exp. #100.]

EastBay FOG. Meetings: 2nd Wed., 7:30 pm, Apostleship of the Sea, 600 Terminal St., Oakland. All microcomputers, MS-DOS, CP/M. Call: (415)272-9099. [Exp. #101.]

EPIC—EastBay PC IBM Computer Club. Meetings: 2nd Tues., 7:00 pm, Milpitas Library, 40 N. Milipitas Blvd. Beginners welcome. [Exp. #100.]

Golden Gate Computer Society (GGCS). Meetings: 4th Mon. 7:30 pm, San Rafael Community Center. Free intro to computers class at 6:00 pm. Call: (415)927-2909. [Exp. #102.]

IBM Technical SIG. Meetings: 2nd Thurs., 7:00 pm, Cubberley Community Center, 4000 Middlefield Rd., Rm. H-1, Palo Alto. Sponsored by Software Entrepreneurs' Forum. Call: Mike Schmit, (408)244-6826. [Exp. #98.]

Micromate-CP/M-DOS User Group. Meetings: 1st Thurs., 7:30 pm, Chabot Observatory, 4917 Mountain Blvd., Oakland. Call: Ed Miller, (510)376-1611. [Exp. #99.]

NBUG—North Bay User Group. Meetings: 2nd Thurs., 7:30 pm, 330 Rogers St., Vallejo. All computer users welcome. Call: (707)644-9327. BBS: (707)643-NBUG. [Exp. #100.]

PC BasicS: Silicon Valley Computer Society SIG. Meetings: 3rd Mon., 7:30 pm, 847 W. Maude Ave., Sunnyvale. Talks presented by Rich Wingerter of Zip Consulting & Design. Call: (415)326-2435. [Exp. #98.]

Peninsula Computer Club. Meetings: 2nd Thurs., 7:30 pm, Social Room, 222 Laurel St., San Carlos. DOS and CP/M libraries. Call: Larry Welling, (415)593-9981. BBS (415)571-9259. [Exp. #99.]

San Francisco Business Computers. Meetings: 4th Thurs., 5:30 pm. For those who use computers in business. Visitors $5. Call: (415)788-5338. [Exp. #100.]

San Francisco PC Users Group. Meetings: 3rd Tues., 6:15 pm, Conference Center, Bldg. A, Fort Mason. Call: (415)929-1993. [Exp. #101.]

South Bay WordPerfect User Group. Meetings: Monthly, dates vary. Saratoga Community Library. Free. Call: Martin Van Derpool, (408)238-8434. [Exp. #98.]

KNOWLEDGEMAN

Bay Area KnowledgeMan (And Guru) User Group. Meetings: 1st Tues., 6:30 pm., JNZ, Inc., 826 Las Trampas Rd., Lafayette. A forum for discussion and info concerning mdbs products, esp. KnowledgeMan and Guru. Call: (510)947-4878. [Exp. #101.]

LAPTOPS

HPX HP Laptops & Handhelds. Meetings: 2nd Sat., 10:30 am, Sunnyvale. Call: Michael Felsenstein, (415)564-8279. [Exp. #100.]

MACINTOSH

A32 Macintosh User Group. Meetings: 2nd Sat., 10:00 am, GTE Cafeteria, 100 Ferguson Dr., Mountain View. Call: (408)263-0398 days. [Exp. #97.]

BMUG—Berkeley Macintosh User Group. Meetings: Every Thurs., 6:00 pm, Physical Sciences Lecture Hall, UC Berkeley Campus. Call: (510)549-BMUG. [Exp. #101.]

BMUG West. Meetings: Last Mon., 6:30 pm, San Francisco Exploratorium. Call: (510)549-BMUG. [Exp. #101.]

International Macintosh Users Group (IMUG). Meetings: 3rd Thurs., 6:45 pm, location varies. A forum for multilingual computing. Call: Roger Sherman, (415)895-5146. [Exp. #101.]

Let's Go Macintosh Computer Society. Meetings: 3rd Thurs., 7:00 pm, Skyline Jr. College, Media Center, Rm. 2105, San Bruno. See and try interesting new products, meet other Mac users, hear guest speakers. Call: Fidel Cajulao, (415)221-2995, or Nolan Apostle, (510)947-2523. [Exp. #100.]

Macintosh SIG. Meetings: 3rd Tues., 7:00 pm, Apple Cafeteria, City Center 4, De Anza and Rodrigues, Cupertino. Sponsored by Software Entrepreneurs' Forum. Call: Jeff Cherniss, (408)356-9901. [Exp. #98.]

Macs Of Marin. Meetings: 2nd Thurs., 7:00 pm, Redwood High School, Larkspur. Marin County Mac User Group for all levels of expertise, beginners welcome, SIGs. [Exp. #102.]

SMUG (Stanford-Palo Alto Macintosh User Group). Meetings: 1st Mon., 7:00 pm, Syntex Conference Center, 3401 Hillview Ave., Palo Alto. Call: (415)328-4933. [Exp. #99.]

SPC Apple User Group. Meetings: 2nd Wed., 7:30 pm, Fremont Main Public Library. The Society for Prevention of Cruelty to Apple Computers Users Group supports all Apple and Macintosh computers. Call: Jim Weil, (415)796-7169. [Exp. #100.]

Women's Macintosh User Group. Meetings: 2nd Tues., 7:00 pm, ComputerWare, Palo Alto. Call: Buffy Joseph, (415)792-2840 or Tayna Halepota, (415)949-3936. [Exp. #100.]

MULTIMEDIA

BMUG Multimedia SIG. Meetings: 2nd Mon., 6:00 pm, Call: (510)549-BMUG. [Exp. #100.]

International Interactive Communications Society—IICS. Meetings: 2nd Wed., 7:30 pm, Call: IICS Hotline, (415)328-7318. [Exp. #99.]

Multimedia SIG. Meetings: 1st Thurs., 7:00 pm, Cubberley Community Center, 4000 Middlefield Rd., Palo Alto, Rm. H-1. SIG of Software Entrepreneurs' Forum. Call: Patrick Milligan, (408)257-1547. [Exp. #99.]

Multimedia User Group. Meetings: 1st Wed., 7:00 pm, 600 Townsend St., 1st Fl., San Francisco. A forum to learn about the multimedia industry, get your questions answered, and meet with fellow professionals. Sponsored in part by Proxima and Mitsubishi. [Exp. #102.]

MUSIC

MuSIG. Meetings: 1st Sun., 2:00 pm. Various locations. Based in Palo Alto. A network of people helping each other learn about computers and music: MIDI, hardware, software, performance, and programming. Call: (415)858-1493. AppleLink: UG0390. [Exp. #99.]

NETWORKING

NetSIG. Meetings: 4th Tues., 7:00 pm, Novell Sunnyvale. Networking SIG for Software Developers. SEF group. Call: Skip Addison, (408)747-4356. [Exp. #97.]

NEURAL NETWORKS

Neural Networks SIG. SIG for Neural Networks and its applications. Call: Kumar, (408)946-5835. [Exp. #98.]

NEXT

BANG—Bay Area NeXT Group. Meetings: 3rd Wed., 7:00 pm, Terman Aud., Stanford. Presentations and lectures. Call: (415)327-BANG. Email: info@BANG.org. [Exp. #102.]

Berkeley NeXT Users Group. Meetings: 2nd Tues., 7:00 pm, 2055 Center St., Berkeley. Call: Bernt Wahl, (510)644-0139. [Exp. #98.]

NOVELL

Silicon Valley Novell User Group. Meetings: 3rd Wed., 6:30 pm, Coco's, 1305 S. Mary Ave., Sunnyvale. Call: Bill Strouse, (408)739-9081. BBS: (408)739-8753. [Exp. #99.]

OMNIS 7

GUIdata Bay Area Omnis 7 User Group. Meetings: 1st Mon. Newsletter, forum for all users. Call: Peter Bennett, (510)935-5203. [Exp. #101.]

Continued on page 269

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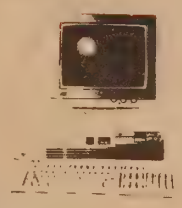

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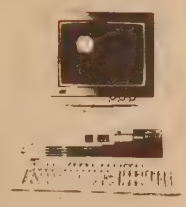

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Viewsonic 7	17" 1280x1024	1150
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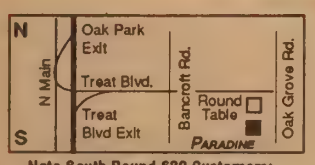

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Continued from page 114

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Mr. BIOS, $69.95
Microid Research, Inc.
233 D Walsh Ave.,
Suite 6
Santa Clara, CA 95057

Available From:
Smart Micro Technologies, Inc.
143 Triunfo Canyon Rd.
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Windows or other software that uses the protected mode features of the CPU chips.

Another option lets you boot your computer in its highest-speed mode, called Turbo, or its lowest-speed mode, whatever it's called. This can be done through keyboard commands: Ctl-Alt-+ for turbo and Ctl-Alt-hyphen switches to low speed. Without Mr. BIOS, switching between speeds is normally done through a turbo button on the control panel of the computer.

Other options include:

•The Cache menu lets you set cache timing and sizes, if your computer has the ability to cache memory.

•The Shadow menu allows you to use shadow RAM to increase the speed at which the computer executes BIOS and video memory. You can use the 384K segment of memory between 640K and 1MB. If you are really hungry for memory, Mr. BIOS allows you to map the bottom three-fourths of the BIOS EPROM as UMB space, although you will also need to tell the memory manager to use the F000 area of the BIOS area.

•A DMA menu lets you set the DMA clock speed divisor as well as the wait state used. You can divide the ATCLK by 1 for faster DMA operation and can set wait states from 1 to 4 for both 8- and 16-bit waits.

•A Chipset menu lets you tune some of the differing chipsets for optimum performance. Here you can set DMA timing, Refresh timing, and AT-bus timing.

•The Security menu allows you to enable or disable password protection. If you forget the password, you will have to pull the CPROM chip to let it discharge completely, then reinsert it to reprogram your CMOS.

•The documentation that accompanies the chip is complete and contains excellent explanations for many of the POST and setup options. A fairly complete appendix contains the port addresses for the POST codes as well as a thorough description of the potential beep codes.

So, can changing a BIOS make any difference? For me, changing to Mr. BIOS fixed a video problem I was experiencing.

CAN A NEW BIOS MAKE A DIFFERENCE?

So, can changing a BIOS make any difference? For me, changing to Mr. BIOS fixed a video problem I was experiencing. The Renior Super VGA board I am using is extremely high-speed. However, even though I had a motherboard that said it was a zero wait state board, I could not use the Renior board in turbo mode because it could not match up with the motherboard's zero wait state. The Renior folks told me that the problem was that I really did not have a zero wait state board. The solution had been to slow down the bus speed by putting in one wait state into the Renior board to get things to work smoothly. After replacing the original BIOS in my 40MHz 386 with Mr. BIOS all those problems went away. I could run the motherboard at the high bus speed and the Renior board in turbo mode.

Microid has been the first to introduce many of these features, which are not standard in most other BIOS chip designs. I do love the little guy with the great innovation. If you have any BIOS-related problems on your computer, I recommend getting the latest version of Mr. BIOS. ■

Check the MicroTimes Calendar of Events in this issue for computer-related classes, seminars, and shows in your area.

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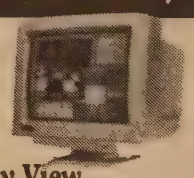

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Continued from page 106

Assuming ACE worked according to the ideal plan, is the idea that people would come in from the PC side, basically hit the performance wall, and be able to move their apps over onto RISC workstations without the trauma that they would have today?

I think that's the Microsoft strategy, and Microsoft will provide a way for that to happen, yes.

That will happen in some cases. In others, companies will develop new innovative software development programs, and they may decide to write their software for UNIX platforms, because of the power of RISC processors. I think that some people will stick with the Microsoft operating system, others will use UNIX.

Both will happen, both will be successful.

We're starting to see software from vendors like Quorum that allow Mac applications to run on workstations. Do you see that as essentially a transitional and short-term thing?

Wasn't it great to see that demonstration? The performance? Just how much faster an Iris is than a Mac even in that mode?

What a lot of the new software relates to is new ways of doing things, and new applications. And a lot of the people out there are going to continue to do things in old ways for some time.

But this is a way to get that new performance with the old paradigms, and that's important too. It's especially important as a transition program.

We have this program inside Silicon Graphics called Move Over Mac. We started out with about a thousand Macintoshes in Silicon Graphics, because we're the kind of innovative users that use Macintoshes. Over the last two years we've been gradually getting rid of them and switching over to Iris Indigos. But in doing that, it'd be nice to have some kind of way to run some of the old software in the process. It appears that the approach by Quorum is an excellent way to do that.

Time will tell, but I think as early as the fall, this kind of software can really be available on Irises.

Off in the fringes of the workstation universe is NeXT. Where do you see that fitting in long term?

The world doesn't have very many computer companies left that are defining platforms. Really trying to figure out how people want to use computers and defining a platform of software and hardware to provide that. Silicon Graphics is one of them that are still doing that, and I admire the fact that Steve Jobs is also doing that.

Steve is trying to define a new platform. So many companies today are just copying what other companies do, and cloning them. It's nice to see a company that's willing to do the hard work, of really defining how people are going to use computers and trying to design a platform that fits their needs.

Whether it does that or not is another story. Frankly we haven't focused on it a lot; we don't compete with NeXT a lot. We've been focused more on our own customers and how to serve their needs better. Again, I think we're caught up there in the RISC vs. CISC wars—we really believe in high-performance RISC processors, I think the NeXT machines tend to be very low-performance machines compared to what our customers want. But you admire the fact that he's doing some good stuff there, and it is a new kind of platform. It's through experimentation and new ideas that things happen.

Do you see most of your future growth as being at the high end or the low end?

Certainly the low end of our market is growing faster than the high end. Our high-end business is very important, but the reason the high-end business is very important is that at the high end we deal with the very best and brightest computer users in the world. They love us, and we have a very high market share at the high end of our business.

We deal with the people at Lucasfilm and Sony Tri-Star and NASA and Genentech; in a wide range of industries, we're dealing with the very top people. And that's where we experiment with new ways of doing things—new graphics features, new ways of developing images, new computing techniques, and so on.

And then once we get it right at the high end, in less than three years we can have it available at less than $10,000. So it's a tremendous advantage to us to be so strong at the high end.

But the high-end market is not growing as fast as it once was.

People think before they spend that kind of money...

They do, in today's economy. And also, frankly speaking, a lot of our high-end business was Defense

Continued from page 236

WHAT IS BMUG?

BMUG is an educational, nonprofit, consumer advocacy group organized to share information, and provide critical direction to users and developers in the computer community worldwide. It is an independent advocate, not affiliated with any manufacturer, delivering trustworthy information and useful products.

Like any growing organization, it is many different things to its thirteen thousand international members. BMUG supports many Special Interest Groups (SIGs), a Bulletin Board System (BBS), free HelpLine, software library, weekly meetings, publications, and much more. BMUG also puts out a semi-annual 400+ page book that we call our "newsletter."

Our motto continues to be: *We're in the business of giving away information.*

Come and join in the dialogue at the BMUG main meeting every Thursday evening, 6–9 (or whenever we finish), in the Physical Sciences Lecture Hall on the UC campus. BMUG West is a meeting held monthly in the Exploratorium, San Francisco's science museum.

The BMUG Office, 2055 Center St. (a half block from the BART station) is open to the public 9 am to 5 pm. Please come by and say hello, meet other members, and hang out.

The BMUG HelpLine, (510)540-1742, and our fax number, (510)849-9026, provide technical assistance and telephonic hand-holding during business hours (11 am–5 pm). If your question can't be answered on the spot, we try get you in touch with someone that can help. Of course, not every problem can have a happy ending—but we try.

BMUG has one of the most up-to-date, comprehensive software libraries around, with hundreds of disks filled with the latest versions of public domain or shareware programs, and HyperCard stacks. New disks are unveiled almost every week at the Thursday general meeting. BMUG also brings you the *TV-ROM*™, a fantastic collection of public domain QuickTime videos.

Our sixteen-line BBS offers many of the latest versions of files in our software library, as well as news, private mail, rumors, etc. The BMUG BBS is part of the worldwide EchoMac Network on FIDOnet (161/444); by calling a local FIDOnet BBS in your area, you would then be able to get in touch with us wherever you are, as well as send mail to users everywhere! With our multiline capability, you can have access to BMUG almost twenty-four hours a day. It's easy to use, fun, and a great resource.

BMUG can be found on most electronic services. BMUG can also be reached through the international USENET network through bmug@*garnet.berkeley.edu*.

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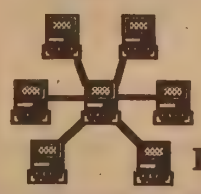

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Department-driven, either directly or indirectly, and defense spending is on its way down. So we've seen a shift there into other markets, but the other markets tended to be a little bit more low-end.

Our high-end business is growing at 20–30% a year, and that's not bad. But our low-end business is growing a lot faster than that, and it averages out at about a 40% growth rate as a company right now.

Our low-end business is exploding. The way we calculate our numbers, it now represents about 60% of our revenue, and more than 80% of our units.

Going back to what you said about a lot of your traditional high-end customers being defense-oriented—this is probably true of a lot of high-end hardware vendors. What do you think the impact of this is going to be long-term? You guys are diverse enough that I don't see you suffering deeply about this, but...

[laughs] A fairly small percentage of our business was ever Defense Department anyway, but a lot of the things that drove the supercomputing market and the high-end workstation marketplace did relate to defense spending.

But the nice thing is we're seeing a boom in film animation, and those people use high-end systems. We're seeing a boom in molecular chemistry—those people need high-end systems. We're seeing a boom in architectural walkthroughs, and architectural and product design in the automotive companies—those are really high-end activities, and generally they have the money to deal with it. We're certainly seeing a boom in different types of high-end scientific analysis, including the environmental work.

So what it's causing is a lot more focus on some, frankly, more relevant areas.

Besides that, there is still a lot of defense research going on, and it's the research sector of the market that we're most involved in, even though a lot of our systems are used for training as well, with the simulation activity.

At the high end, who do you see as your competitors?

At the high end, we really don't have any.

So things like Connection Machines and Crays and stuff are not really in the same world?

Well, our systems get used with them a lot. At the high end, the market's willing to experiment with new ideas, like the massively parallel things. There's always a market for about a hundred million dollars' worth of whatever. But we don't compete a lot with much of anybody there, in terms of the visualization problem. We have, certainly, over a 50% market share at the high end—I don't know how high it is, but it's certainly over fifty.

The real competition comes as you bring these capabilities down into the $10,000 market, or the $5,000 market, where you're competing with people who perhaps don't have the kind of graphics sophistication, but who have traditionally been in that market. So you have established customer-vendor relationships, and you need to break in.

So we have sharp elbows, and we try to elbow our way into the marketplace. That's what we're trying to do. That's where it's really competitive, and we compete with everybody. ■

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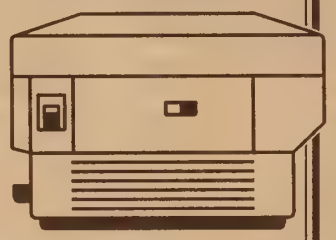

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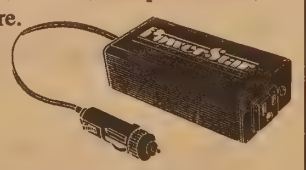

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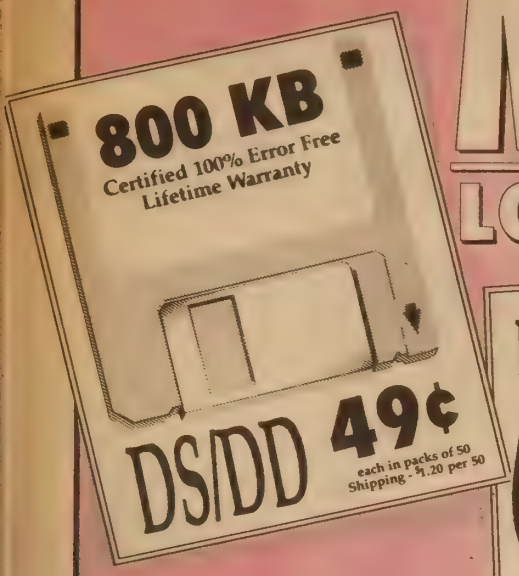

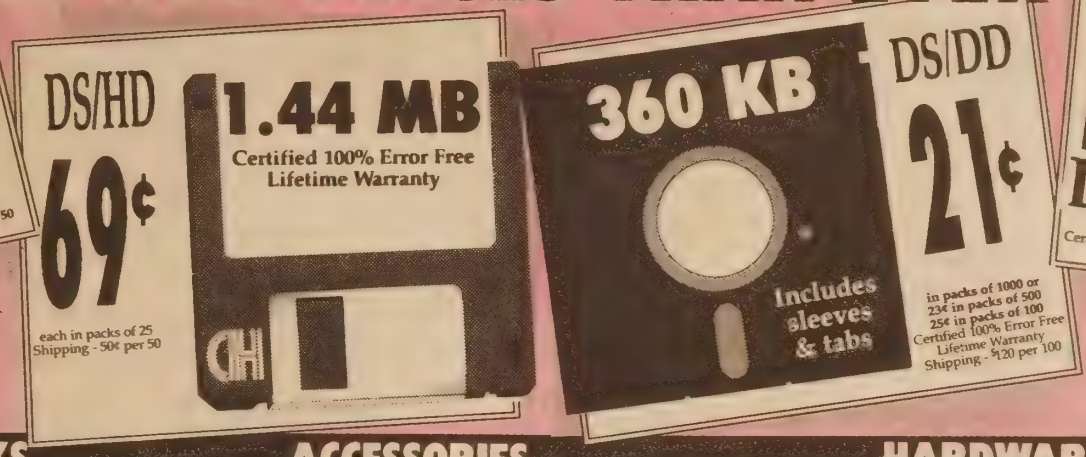

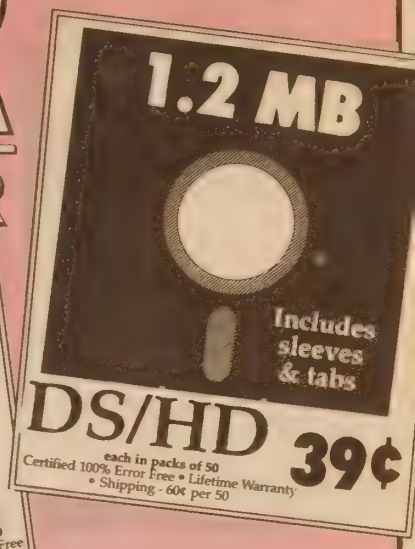

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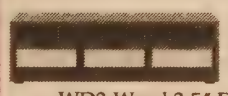

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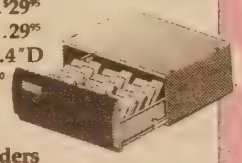

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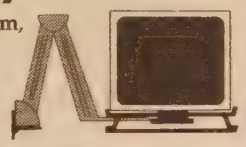

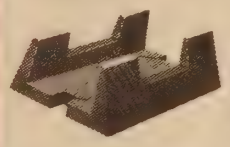

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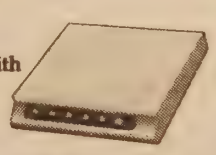

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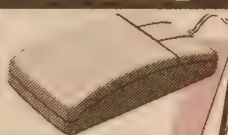

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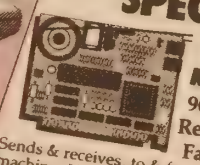

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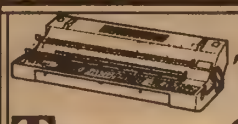

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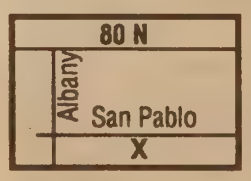

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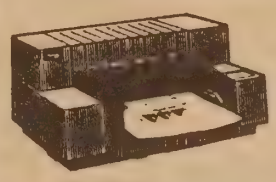

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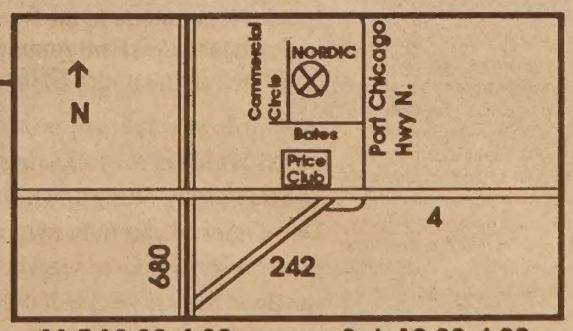

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The Great American Trade Show Test Or How To Succeed In Business Without Really Trying

BY JOHN C. DVORAK

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What is your trade show IQ? Some people enjoy trade shows. Some people hate them. If you're in any sort of business you must attend them. In the computer industry there are a slug of trade shows scattered around the country and throughout the year. There's one in Atlanta one week, Los Angeles the next. A couple weeks ago there was PC Expo in New York. In a few more weeks there will be Networld, then COMDEX. After awhile we all become experts on the subject of trade shows more than on the subject of computers.

At some big shows such as Expo or COMDEX or even Macworld Expo, most people attend to schmooze and say hi to people they only see once a year, usually at a show. Most of the new products this year have already been shown elsewhere, orders already taken. The Winter COMDEX is a "pure" trade show feeding on its own success. It's one of the few trade shows where parties are of primary importance and it's not a sin to have a little fun.

Most people take trade shows too seriously. Here's a valuable trade show IQ test that I worked up so you can test yourself and see how you rate as a trade show attendee.

1. Before going to the trade show you must plan ahead. Which of the following best applies to your planning?

a) Find out who else might be there and make appointments to see them in advance. **b)** Wait for people to call you to make the appointments. **c)** Wait until the last minute to make appointments. **d)** Tell everyone your calendar is full and make *no* appointments.

2. You have to stay someplace. When deciding how much to spend on a hotel do you:

a) Find a high-quality inexpensive hotel and book months in advance? **b)** Get a cheap room in a luxury hotel and book months in advance? **c)** Get what you can at the last minute? **d)** Find a suite and tell the bookkeepers that's all that was available?

3. Which of the following best describes your morning while you're attending a trade show?

a) Get up at 7. Shower. Read the morning paper. Go to an 8 am sales meeting or product introduction breakfast. **b)** Get up at 7. Shower. Order room service and have a big breakfast. Review previous day's notes and the day's schedule. **c)** Get up at 8. Shower. Have a continental breakfast. Read the paper and go straight to the show. **d)** Sleep in until 11. Tell the boss you had appointments all morning.

4. How do you like to approach your first encounter with the exhibit halls? Which of the following best describes your method?

a) You start by sitting down with the guide to the show and with your Day-Timer to carefully map out the day's activities. **b)** Go straight onto the show floor to see what seems important and new. **c)** Go onto the floor and ask people if they've seen anything interesting, then go there. **d)** Look for the booths with the cutest hostesses and go there.

5. When in a booth or exhibit area do you mostly:

a) Find a company representative and have him show you what's important? **b)** Wander around the area and read each blurb on the walls near the products? **c)** Pick up some literature and leave a card? **d)** Chat with a cute booth hostess about the best night clubs in town?

6. After the show closes for the day do you mostly:

a) Go back to the hotel and review what you did that day and make preliminary plans for tomorrow? **b)** Discuss the show with a partner? **c)** Go back to the hotel and watch TV? **d)** Go directly to the hotel events board and find where the hospitality suites are, and then go there to get free drinks?

7. What best describes your attitude towards drinking at a hospitality suite?

a) Order Calistoga water or Perrier with a twist and make it known you have to be clear headed. After all, tomorrow is a busy day. **b)** Have one beer then leave. **c)** Have a couple of glasses of wine. **d)** Look into the bar area and find the most expensive Cognac they have. Order it. Minimally, if they don't have a decent X.O., complain to the party giver.

8. When a hospitality suite has food do you:

a) Have a few pieces of the most healthy foods highlighting the celery and dip? **b)** Eat only cheese? **c)** Eat some lean roast beef? **d)** Pig out on lobster and crab?

9. When invited to a big evening event such as a stage show or rock and roll party, what do you do?

a) Decline the invitation because there are better ways to spend your time. **b)** Go to the party in hopes that you can make a few business contacts. **c)** Go to the party to unwind. **d)** See if you can get more invitations and hand them out to people as though you're a big shot.

10. After a big trade show is over and you return home, do you:

a) Review the show with associates? File the brochures and make notes on who to call for follow up? **b)** Go back to work, write a short memo about the show, and brief other employees? **c)** Put the show out of your mind for a few days and place the literature in a basket to be read later? **d)** Moan and groan about how tough the show was and how you need a vacation?

Scoring: For each answer where you said "A," give yourself 10 points. "B" scores 6, "C" scores 4, and "D" scores zero.

•If you scored 100 points, you are one heck of an employee. You take the job so seriously that it is doubtful whether you really need to go to a trade show. In fact, you may consider another line of work. You must be bored stiff.

•80–100 means you show some signs of improvement over the perfect score. At least you think about something other than business once in a while.

•50–80 is the normal range for the modern show attendee. You are simply normal if you fall into this category.

•4–50 means you try your best to mix business with pleasure.

•A score of zero indicates you are one heck of a party animal. Congratulations. If anyone has fun at a trade show, it's you.■

© 1992 by John C. Dvorak. All rights reserved. *John C. Dvorak graduated from the University of California. He is a contributing editor of* PC Magazine *and* MacUser, *and is considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.*

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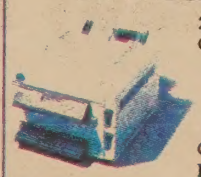

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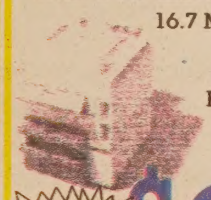

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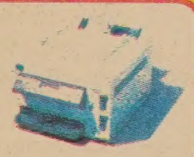

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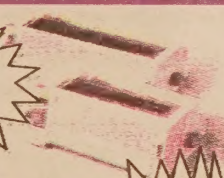

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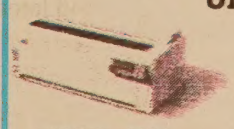

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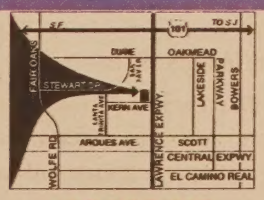

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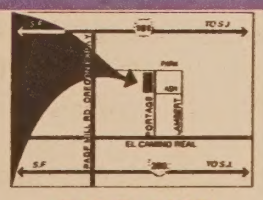

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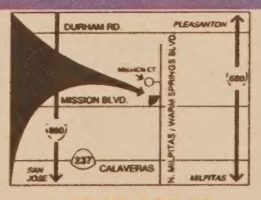

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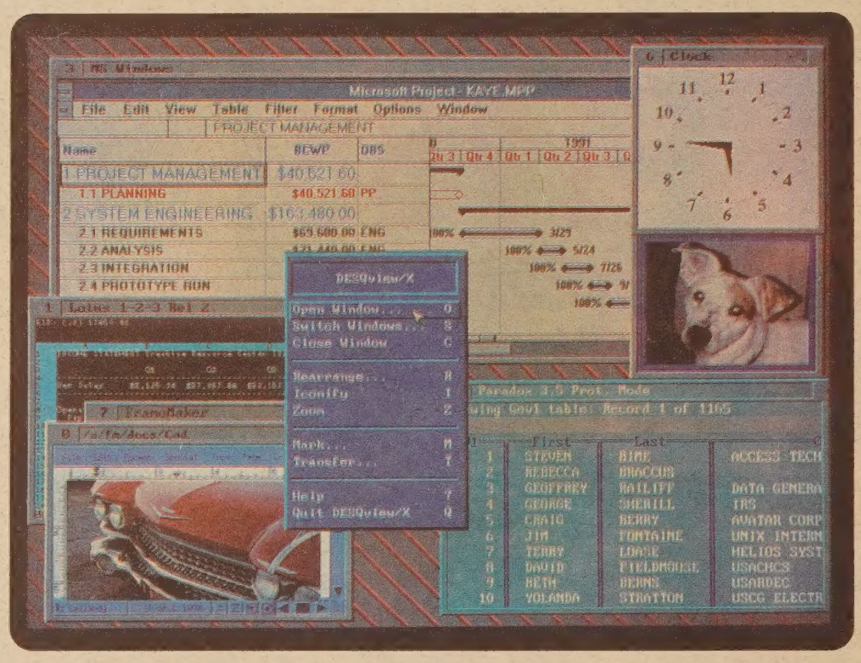

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